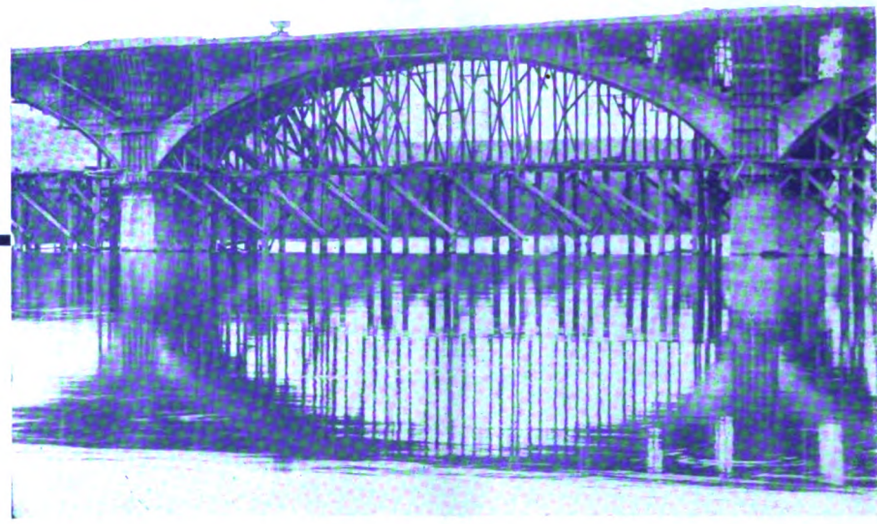
A.S.E.

Western Engineering

Volume 5, No. 12
$3 per year—25c. the copy

SAN FRANCISCO, JUNE, 1915

Buyers Directory, page 15
Advertisers Index, page 20



The Reid-Ferry Bridge Over Sacramento River

By R. T. ENGLISH

The problem of constructing a permanent bridge at comparatively small expense was solved in this case by the use of reinforced concrete. The bridge is on the State Highway and is 639 feet long with a clear roadway of 21 feet. From the bridge floor to the bottom of the foundations is about 60 feet on an average. The total cost was $49,640.

ALSO IN THIS ISSUE:

Colorado River Irrigation and Reclamation Problems
By J. B. LIPPINCOTT

Construction of Road into Hetch Hetchy Valley

Methods and Costs of Construction of Concrete Highways in Orange County, Cal.

Gasoline and Synthetic Crude-Oil
By WALTER O. SNELLING

Arroyo de La Brea Storm Sewer
By W. C. SAWYER

Navigability of the Sacramento River
By E. G. HOPSON

Increasing Capacity of Oil-Fired Babcock & Wilcox Boilers
By J. E. WOODBRIDGE

Tests of Melting-Points of Cast-Iron Tubes
By R. F. CHEVALIER

Reinforced-Concrete Tile
By W. J. SCHLICK

Municipal Tunnel and Highway at Richmond, Cal.

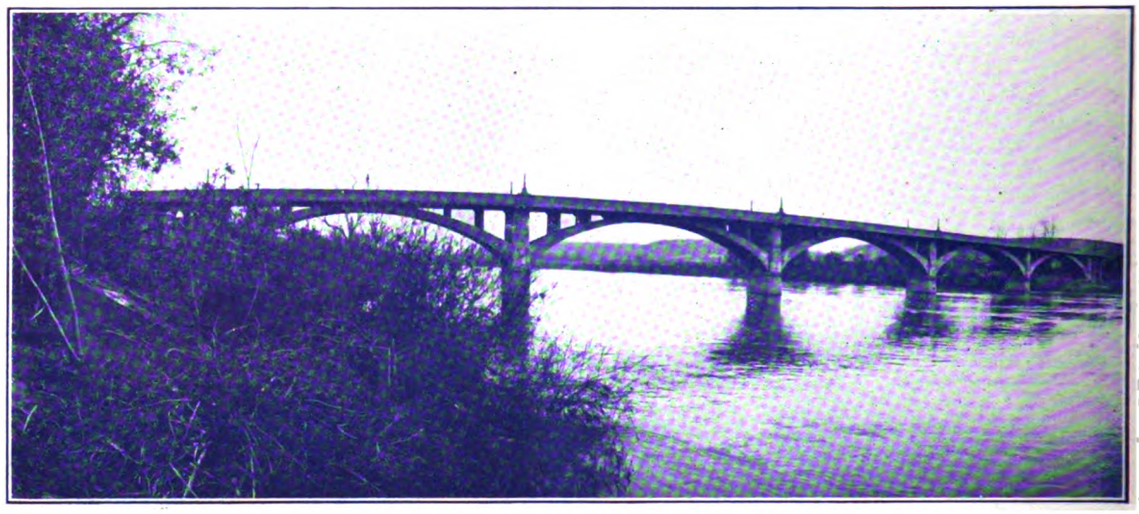
The Snoqualmie-Pass Tunnel

Large 'Coyote-Hole' Blast at Cement Quarry

The San Francisco Water-Supply Problem

Generated on 2024-09-30 00:51 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

First Concrete Bridge Over the Sacramento River



REID-FERRY BRIDGE, AT REDDING

SHASTA COUNTY does not propose to be put to constant expense in maintaining her bridge for the State Highway over the Sacramento River, near Redding, and therefore wisely decided to erect a permanent structure of concrete. The job cost nearly $50,000, but it is now done for all time.

Standard Portland Cement

Was Used Exclusively

The total length of the bridge is 639 feet. The roadway is 21 feet in the clear. The five spans are each 108 feet in the clear.

Standard Portland Cement Corporation

Office: Crocker Building, San Francisco, Cal.

Works: Napa Junction, California

Generated on 2024-09-30 00:47 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

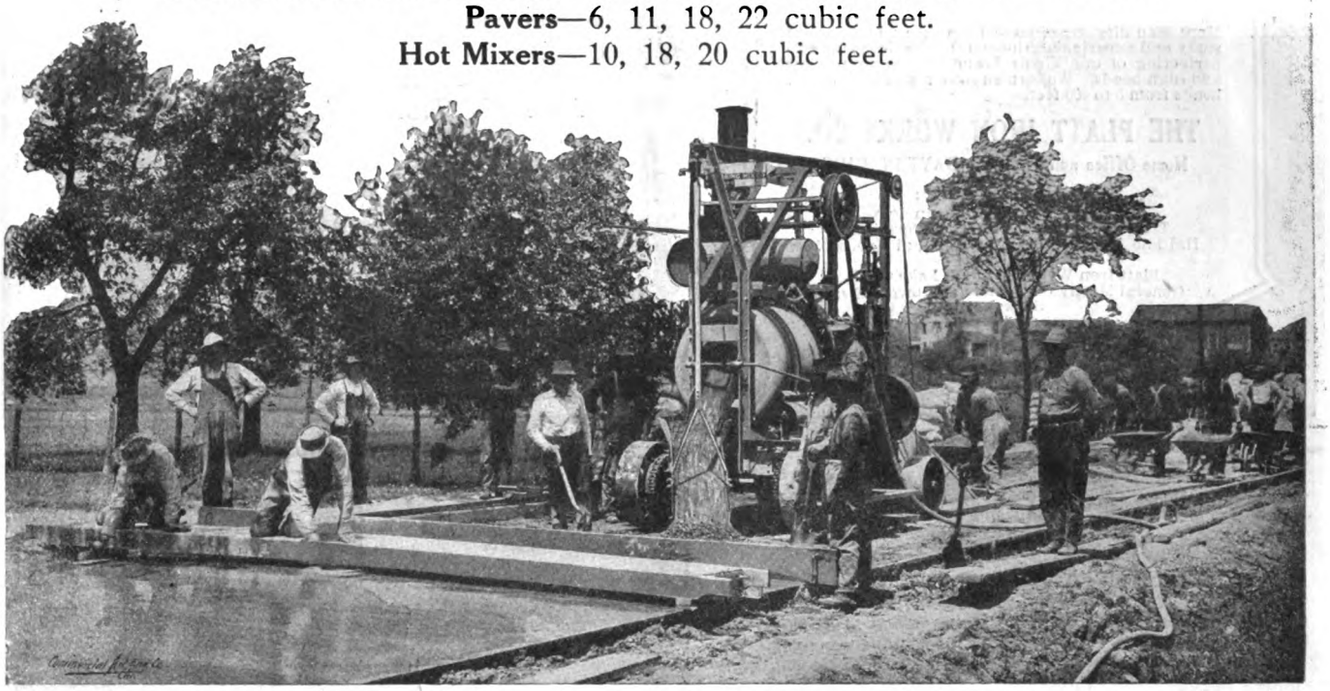
Digitized by Google

Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

KOEHRING

—the fastest loading; the fastest, most uniform mixing, and the fastest distributing—the consistent mixer of lowest yardage costs, season after season—and the catalogue will show you why.

CAPACITIES: Side Loaders—4, 7, 10, 12, 15, 20, 24, 30, 44 cubic feet.
Pavers—6, 11, 18, 22 cubic feet.
Hot Mixers—10, 18, 20 cubic feet.



Get the New Koehring Catalog

You want this new catalogue because it shows you how the Koehring has more automatic time-saving features than any other mixer, and that means profit to you on every day's work; because it is a pictorial visit to every kind of contract—a lesson in crew-handling. It's a valuable, money-saving fact-book for every contractor.

WRITE FOR NEW CATALOGUE TODAY

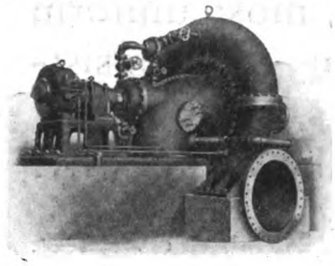
HARRON, RICKARD & McCONE

San Francisco, Cal. **Los Angeles, Cal.**

Generated on 2024-09-30 00:48 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PLATT

WATER WHEELS



More than fifty years have been spent in constant study and experimentation on the development and perfecting of our Victor Francis Turbines, for low and high heads. We furnish water wheel units for heads from 5 to 600 feet.

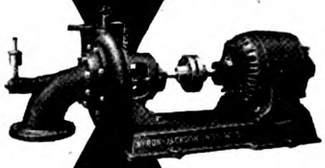
THE PLATT IRON WORKS CO.

Home Office and Factory: DAYTON, OHIO

Western Agents:
Platt Iron Works, San Francisco.
Edw. G. Gordon, 55 First St., Portland.
Hallidie Machy Co., Cor. Occidental Ave. and King St., Seattle.
Platt Iron Works Co., Salt Lake City.
General Machy Co., First and Stevens Sts., Spokane.

PUMPS FOR EVERY SERVICE

"Jackson MADE"



A Better Make Not Made

SELF-PAYING PUMPS

The ideal pump is the pump that will raise the maximum quantity at the lowest cost per gallon, run constantly without repairs and with minimum attention.

"Jackson Made" Pumps do all this and more—they save enough in power and repairs to pay their first cost in a few months.

There is a "Jackson Made" Pump that will do your work at lower cost than other makes

Our expert engineers will work out your pumping problems FREE. Write for catalog No. 30B.

Byron Jackson Iron Works, Inc.

357-361 Market St, San Francisco
212 N. Los Angeles St., Los Angeles, Cal.
Visalia, Cal.
Works: West Berkeley, Cal.

Symons Disc Crusher

ADJUSTMENT

The Disc Crusher takes the rejections, screened or unscreened, from all types of preliminary breakers and a uniform product is obtained (through a wide range of sizes) by the quick and easy adjustment of the discs. This is accomplished by removing or inserting segment plates between the spider and spider plates.

Compensation for wear is also thus obtained, and as the discs wear even and smooth they will practically last until completely worn out.

On account of this adjustment, it is possible to produce the required size of product as the occasion or season demands, no large storage capacity being required.

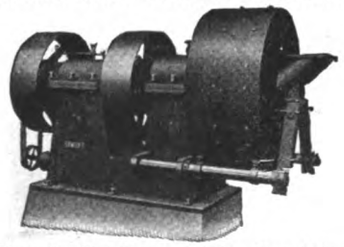
The dependability and large capacity of the Disc Crusher and the quick and easy adjustment of the discs are reasons which make the Disc Crusher so popular among its users.

MANUFACTURED AND SOLD ONLY BY

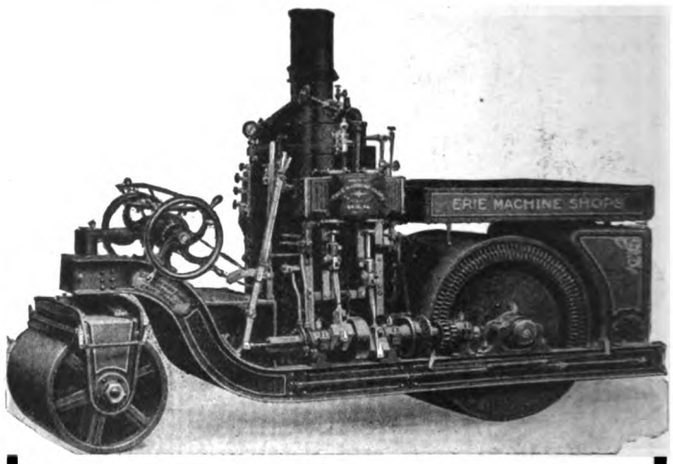
CHALMERS & WILLIAMS

1456 Arnold St., Chicago Heights, Ill.

Los Angeles and San Francisco Agents: N. B. Livermore & Co.
Portland and Seattle: Northwestern Equipment Co.



Eventually Symons Disc Crushers



The ERIE TANDEM ASPHALT ROLLER

Whenever you ask an ERIE User what satisfaction the roller has given, he always says, "perfect." Try it on the next one you see.

EDWARD R. BACON COMPANY

San Francisco and Los Angeles

Generated on 2024-09-30 00:46 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

AMERICAN

Scientific Land Reclamation in the Texas Panhandle

Down in the Panhandle of Texas land which a few years ago was of little value on account of the small rainfall is now being transformed to remarkable productive areas by irrigation through modern well construction and installing the most economical large capacity deep well pumps.

An example of this development is one of the many wells put down by Mr. L. D. McDonald near Hereford, Texas, which is shown in six stages of completion in the accompanying views.

Fig. 1 shows the tractor, "American" rotary drilling machine and tower used in drilling the well, also the concrete mixer used in putting in the foundation for the engine.

Fig. 2 illustrates the installation of the "American" Turbine Centrifugal pump, the pulley being lowered into place in this view.

Fig. 3 shows the development of the water reservoir in the well using the tractor for power. Note the sand piles along the waterway. Nearly 50 carloads of sand were pumped from this well in developing the reservoir.

Fig. 4 is a view of the installation of the permanent oil engine—a 60-horsepower Bessemer engine..

Fig. 5 shows the installation completed, housed and with derrick left standing for use in case repairs are required to well or pump.

Fig. 6 illustrates the third cutting of alfalfa made on this land this season. A fourth cutting, made after this picture was taken, yielded about double this amount through being better irrigated.

In Fig. 5 two pump houses are shown. The one in the distance is 200 feet from the "American" installation and in this well another make of pump and strainer are used. This well is the same size as that in which the "American" pump is installed, but this pump has never delivered over 800 gallons per minute, while the "American" installation has maintained a flow of 2,000 gallons per minute.

Well is 147 feet deep, 26 inches in diameter and is cased the entire depth with No. 8 steel riveted casing. Piping is perforated from first water level, about 40 feet below the surface, to bottom of well with ⅝ inch round holes, spaced 2 inches apart, forming a 26 inch strainer about 107 feet in depth in the water zone.

The reason "American" Deep Well Turbine Centrifugal pumps are more successful than any other of their type is that through unequalled experience in developing large capacity deep wells we have gained greater knowledge of the requirements and we never sacrifice quality for price.

Catalogue 132 describes them. Write for it.

The American Well Works

General Office and Works: Aurora, Ill.
Chicago Office: First Nat'l Bank Bldg.

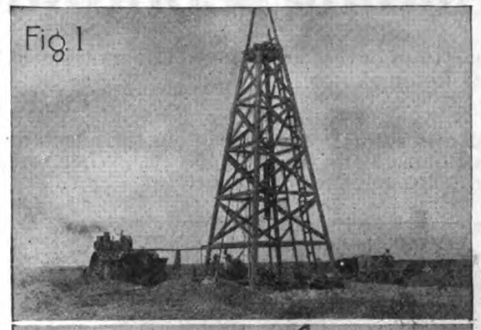


Fig. 1

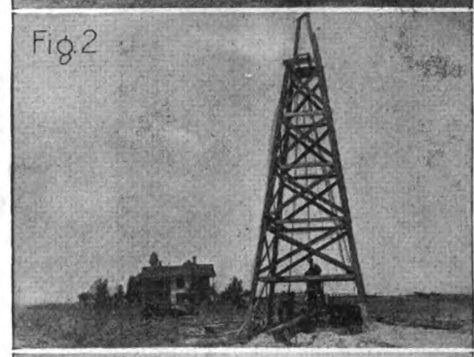


Fig. 2

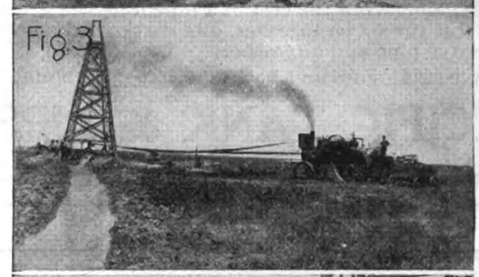


Fig. 3

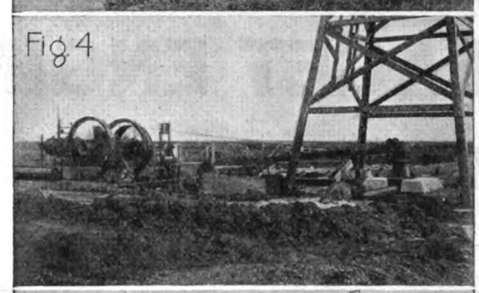


Fig. 4

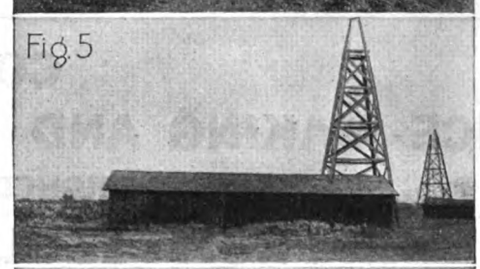


Fig. 5

Fig. 6

Generated on 2024-09-30 00:49 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

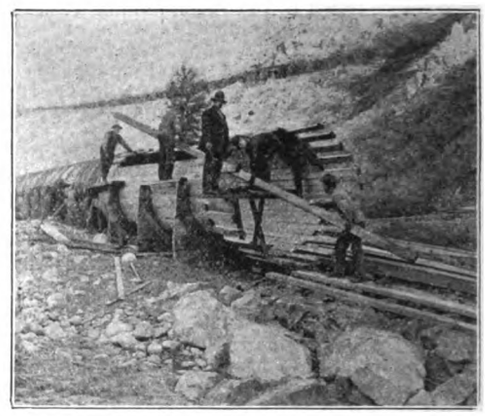
Building Continuous Wood Stave Pipe

Is a revelation to those who have been accustomed to the other kind. No forge, no rivets, no trouble with joints, no elbows; nothing but

FOUR PAIR OF HANDS

The pipe is shipped from one of our three factories, knocked down. On arrival on the ground, the staves and bands are distributed along the right of way. When ready to assemble, the staves are put in place, then the bands, the lugs are tightened and the job is done.

Do Not Forget



That in calculating the cost of a pipe line, there are two factors to be taken into consideration, first cost and erection cost. Put these two together, add cost of transportation, and then make your comparisons between our continuous wood stave pipe and any others.

We have catalogues and booklets that you should add to your reference library. They are yours for the asking.

PACIFIC TANK & PIPE CO.,

405 Equitable Bank Bdg., - Los Angeles, Cal.
314 Market Street, - - - - San Francisco
275 Oak Street, - - - Portland, Oregon

FAGET ENGINEERING CO., INC.

354 PINE STREET
SAN FRANCISCO

315 CENTRAL AVE.
LOS ANGELES

COMPLETE
ICE-MAKING AND REFRIGERATING PLANTS
DESIGNED AND INSTALLED
FRUIT COOLING A SPECIALTY

We carry a full stock of Ammonia Fittings, Insulating Material, Ice Cans, Can Fillers, Hose, Packing, Wrought Iron Pipe, and all supplies for the iceman.

SOLE PACIFIC COAST AGENTS
DE LA VERGNE REFRIGERATING MACHINES
AND CRUDE OIL ENGINES

Generated on 2024-09-30 00:46 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

TANKS

Made in California
Erected Anywhere

Elevated Steel Tanks for Municipal, Railroad, or Industrial Service.

Oil or Pressure Tanks.

Standpipes, Penstocks, Riveted Steel Pipe, or any special Plate Construction.

The favorable location of our three factories not only enables us to make prompt shipments, but also reduces the first cost through a reduction in the freight. Your order will be executed at the factory from which the best rates can be secured.

The experience of our engineers is at your disposal. They will prepare designs and estimates for you.

Western Pipe & Steel Company
OF CALIFORNIA

SAN FRANCISCO 444 Market St. | TAFT | STOCKTON | FRESNO 1036 J Street | SACRAMENTO | LOS ANGELES 1758 N. Broadway

"You Should Worry"

When you place your wagon under a steam shovel or loading bin, you may not always be sure it will stand the strain. But when you are using the

TROY-AJAX

you can drive up with confidence and smile and say to yourself, "let 'er drop," because you know it will stand the strain. It stands the strain because the neck is extra heavily reinforced with steel inside and out clear back to the body of the box. Bed is built of best seasoned oak with sides tongued and grooved. Top edges and corners are thoroughly and strongly ironed. Interchangeable steel or wooden doors. Axles 2½ inch square solid steel—rear axle arched.

There's a little folder that shows you all of the hundred and fifty-five points of superiority. Why not send for it at once. You'll find it mighty interesting.

EDWARD R. BACON COMPANY
San Francisco and Los Angeles

15,000 bbls.

BEAR BRAND
Portland Cement

WILL BE USED BY THE

Government in building the new fortifications at

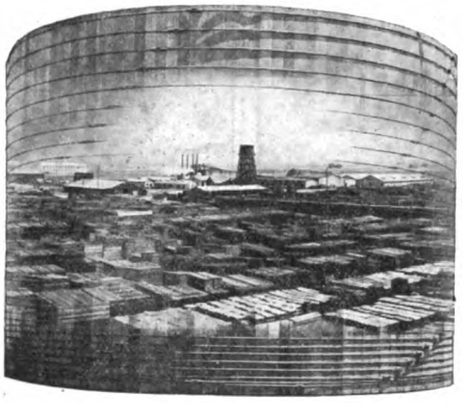
SAN PEDRO, CAL.

Write us for prices on Bear Brand Portland Cement, Ulco Stucco, Blue Summit Lime, Hardwall Plaster, Hydrated Lime, and other specialties.

UNION LIME CO.

Atlantic and Channing Streets
Los Angeles, Cal.

Generated on 2024-09-30 00:47 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



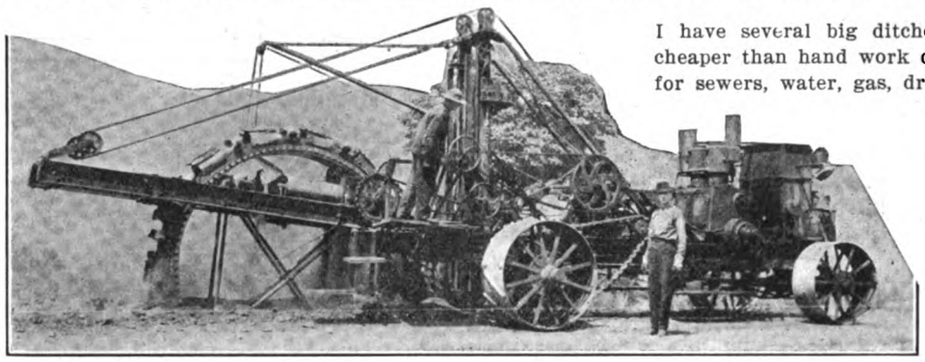
Redwood Tanks and Pipe

Use Redwood for your tanks and pipe and there will be no expense for maintenance. There are Redwood tanks in use in San Francisco that have been filled with hot and cold acid solutions for more than 50 years. They are still in perfect condition.

Redwood is immune from injury by acid solutions. The material used in your order (if we build it) will come from the largest stock of clear air-dried Redwood in the world. We guarantee the quality and workmanship. *Estimates and plans gladly furnished.*

REDWOOD MANUFACTURERS COMPANY
1601 HOBART BDG., SAN FRANCISCO

DITCHING MACHINES READY FOR SUB-CONTRACTS



I have several big ditchers and can do this work 35% cheaper than hand work costs. Have dug miles of trench for sewers, water, gas, drainage, and irrigation work.

Can you afford to tie up part of your capital in highly specialized equipment to be used for a few months? I can save you time, money, bother, and worry. Write or wire

R. F. WARE
1001 Marsh-Strong Bdg., Los Angeles, Cal.
423 Balboa Bldg., San Francisco

"We Strongly Recommend It"

"Though the number of books on Oil is growing somewhat large, we shall place this in the first half-dozen and we strongly recommend it."

—The Petroleum World (London).

Up-to-Date Practice

The latest approved improved methods used in Oil Production. A book written by experienced Oil Technologists who have observed and applied these methods profitably.

OIL PRODUCTION METHODS

by Paul M. Paine and B. K. Stroud,

with a chapter on

ACCOUNTING SYSTEMS by W. F. and W. B. Sampson

240 pages. Fully illustrated. 6x9 in. Cloth, $3.00 postpaid.

CONTENTS

The Distribution, Properties and Uses of Petroleum.

Geology—
Classes of Sedimentary Rocks, Origin of Oil, Relation of Rock Structure to the Occurrence of Petroleum, Surface Indications of Oil, Location and Spacing of Wells, Logs.

Rigs and Equipment—
Standard Drilling Rig, Lumber Lists for Derricks, Rig Iron Lists, Engines and Boilers, Cordage, Wire Rope, Casing.

Drilling Methods—
Standard Method, Rotary Method, Circulating System, Combined Rotary and Standard Drilling.

The Exclusion of Water from Oil-Sands—
Importance of Exclusion of Water, Exclusion of Water by Landing String of Casing, Cementing Water Off by Bailer Methods, Cementing Water Off by Pumping Methods, Exclusion of Water Below the Oil-Sand.

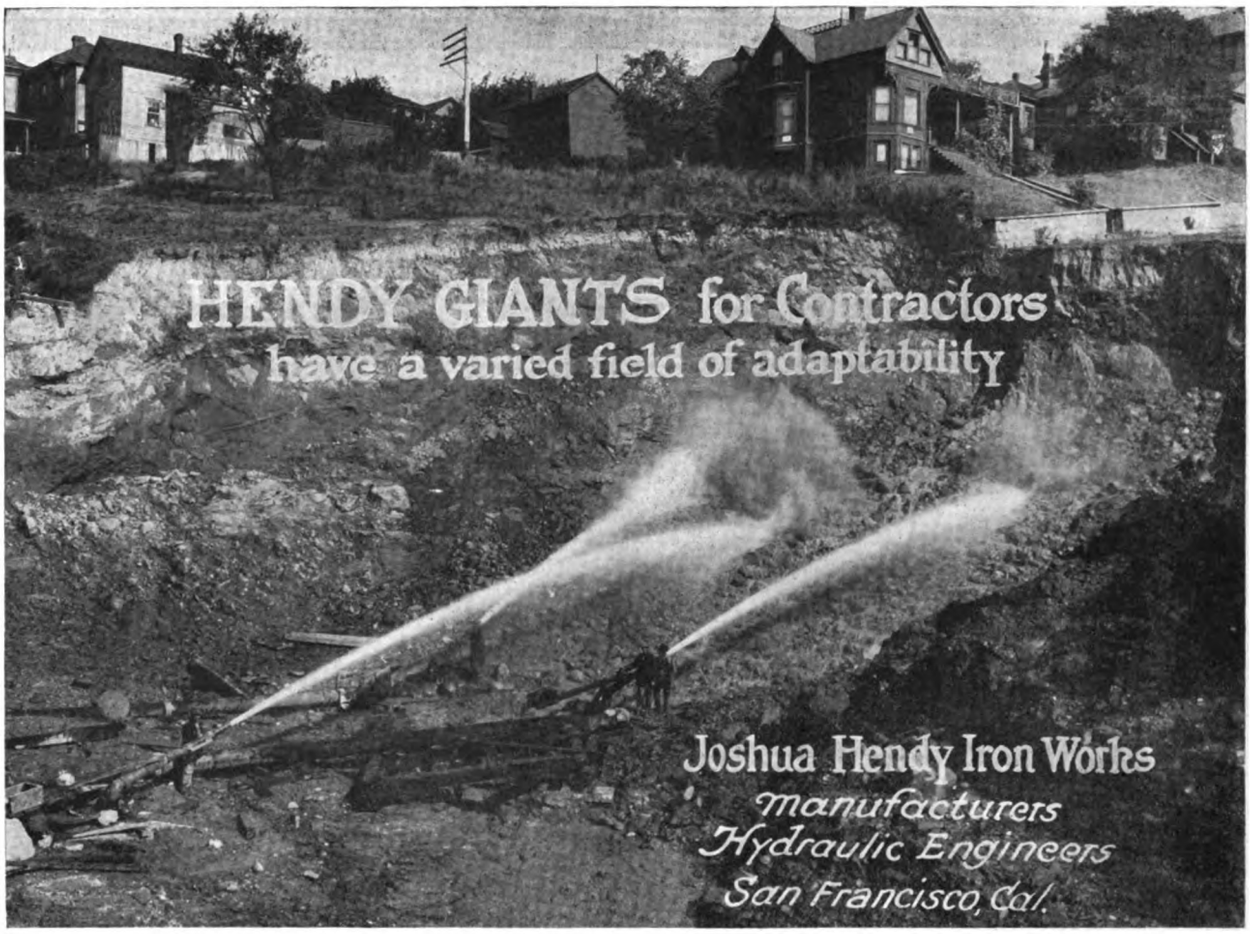
Production—
Flowing Wells, Intermittent Flowing Wells, Artificial Flowing of Oil Wells, Pumping, Multiple Pumping, Compressed Air Pumping, Perforations, Shooting Wells, Dehydrating Oil, Handling Oil, Gas Traps.

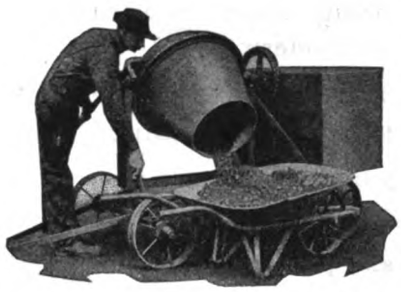
Fishing Tools and Methods—
Fishing for Lost Tools, Fishing for Casing, Accidents to Producing Wells, Rotary Fishing Tools.

Accounting Systems—
Development, Production, Pay Roll System, Purchasing and Stores System, Machine Shop, Reports, Financial Statements.

WESTERN ENGINEERING, 420 Market St., San Francisco

Generated on 2024-09-30 00:50 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN





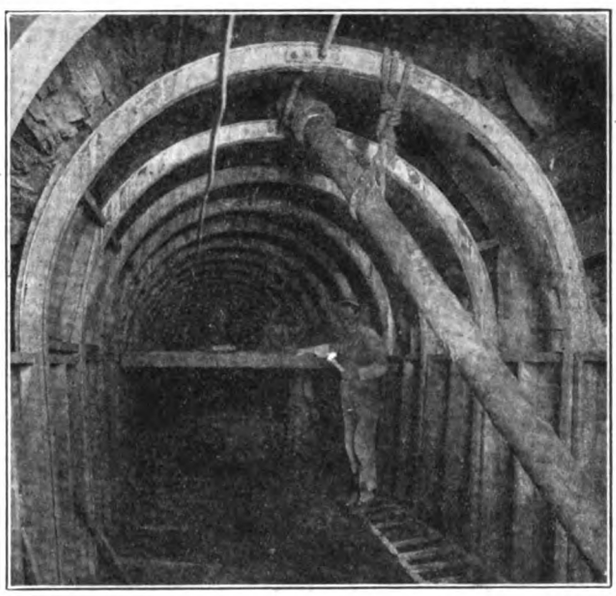
Making the small jobs pay with a JAEGER LITLE MIXER

If your jobs are small and scattered all over creation, you'll find that one or more JAEGER LITLE MIXERS will put your balance on the right side of the ledger. The JAEGER LITLE MIXER is a 3 cu. ft. batch machine, but my! how they do turn out the batches.

You can save enough in a month or so on labor costs to pay for one of these mixers. Let us prove it to you.

EDWARD R. BACON COMPANY
San Francisco and Los Angeles

Lining the pressure tunnels of the Los Angeles Aqueduct by Compressed Air



This view shows concrete delivery pipe entering top of forms which are built up as work progresses. About 75 lin. ft. of tunnel per day of 8 hours is lined in this way.

PACIFIC CONCRETE PLACING CO.
"The Pneumatic Method"
503 MARKET STREET, SAN FRANCISCO

Generated on 2024-09-30 00:47 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Where $23,000,000 is being spent

WHERE $23,000,000 is being spent for an aqueduct, the building of which marks an epoch in history, there is also being carried forward some of the most interesting road construction of modern times.

The illustration shows an Armco-American Ingot Iron Culvert in the mountains of Inyo County, near the source of the Los Angeles Aqueduct.

All over California splendid highways are being built, and pure iron corrugated culverts form one of the most valued of construction materials.

Write the nearest manufacturer for particulars and prices on

ARMCO AMERICAN INGOT IRON CULVERTS

Sheets, Plates, Roofing and Formed Products.

California—Los Angeles and West Berkley
California Corrugated Culvert Company

Colorado—Denver
R. Hardesty Mfg. Company

Montana—Missoula
Montana Culvert Company

Oregon—Portland
Coast Culvert & Flume Company

Texas—El Paso
Western Metal Mfg. Company

Utah—Woods Cross
Utah Corrugated Culvert & Flume Co.

Washington—Spokane
Spokane Corrugated Culvert & Tank Co.

Nebraska—Wahoo
Nebraska Culvert & Mfg. Co.

Texas—Houston
Lone Star Culvert Co.

South Dakota—Sioux Falls
Sioux Falls Metal Culvert Co.

Generated on 2024-09-30 00:49 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Western Engineering

CHARLES T. HUTCHINSON, Editor and Manager
A. T. PARSONS, Assistant Editor
H. W. BAKER, Advertising Manager

420 Market Street, San Francisco

PUBLISHED MONTHLY BY THE
WESTERN ENGINEERING PUBLISHING COMPANY

Entered as second-class matter, June 1, 1912, at the post-office at San Francisco, California, under Act of March 3, 1879

Telephone Sutter 5777. Cable address: Pertusola.
Code: Bedford McNeill (2 editions).

ANNUAL SUBSCRIPTION:
United States and Possessions, and Mexico..... $3
Other Countries in Postal Union..... $4

VOL. 5 SAN FRANCISCO, JUNE, 1915 NO. 12

TABLE OF CONTENTS

EDITORIAL: *Page* 491 REVIEW OF THE MONTH: *Page* 495

ARTICLES

THE REID-FERRY BRIDGE OVER THE SACRAMENTO RIVER.
By *R. T. English.* *Page* 495
The construction of the first concrete bridge across the Sacramento river is described by the superintendent in charge of the work. Novel methods were used in the construction of the piers and in the erection and removal of falsework. **Western Engineering,** June 1915. Illustrated.

CONSTRUCTION OF ROAD INTO HETCH HETCHY VALLEY. *Page* 497
A fifty-mile railroad will be required to transport material for the construction of the main dam and other works in the Hetch Hetchy valley. The roadbed for the first unit of this railroad has been constructed and is now being used as a wagon-road into the valley. Much rock excavation was necessary. **Western Engineering,** June 1915. Illustrated.

COST OF ROAD BUILDING WITH TRACTOR. *Page* 498
Summary of costs of building earth roads in Minnesota. **Western Engineering,** June 1915.

COLORADO RIVER IRRIGATION AND RECLAMATION PROBLEMS.
By *J. B. Lippincott.* *Page* 499
Discussion of the potential resources of the land that might be irrigated from the Colorado river, and particularly that lying within the delta. Estimates are given of the amount of water available for irrigation under different conditions of development of the possible storage. **Western Engineering,** June 1915.

METHODS AND COSTS OF CONSTRUCTION OF CONCRETE HIGHWAYS IN ORANGE COUNTY, CALIFORNIA. *Page* 502
Summary of data regarding an economically constructed highway system in southern California. **Western Engineering,** June 1915. Illustrated.

GASOLINE AND SYNTHETIC CRUDE OIL.
By *Walter O. Snelling.* *Page* 503
Description of a series of experiments conducted by the author, during which he distilled many different mineral hydrocarbons under certain fixed conditions. From all of these he was able to obtain a substance resembling crude-oil in both chemical and physical properties. From this substance, by a second distillation, a constant proportion of gasoline and kerosene could be obtained. While the process has not yet gone beyond the laboratory stage, there is reason to believe that it has commercial possibilities. **Western Engineering,** June 1915.

HANDBOOK OF THE COAST AND GEODETIC SURVEY. *Page* 506
Summary of contents of a recent government publication which contains much information that is valuable to engineers concerning the work of the Survey. **Western Engineering,** June 1915.

ARROYO DE LA BREA STORM SEWER.
By *W. C. Sawyer.* *Page* 507
Methods of construction of a large storm-sewer, built principally of reinforced concrete, are described. **Western Engineering,** June 1915. Illustrated.

GROUND-WATER IN SACRAMENTO VALLEY. *Page* 508
Summary of contents of government report on wells and pump-irrigation. **Western Engineering,** June 1915.

SEWAGE AS FERTILIZER. *Page* 508
Data regarding fertilizing value of sewage from several cities. **Western Engineering,** June 1915.

NAVIGABILITY OF SACRAMENTO RIVER.
By *E. G. Hopson.* *Page* 509
Discussion of present navigation conditions and the methods for their improvement by constructing reservoirs without interfering with irrigation. **Western Engineering,** June 1915.

MAGNESIAN CEMENT. *Page* 510
Summary of report on its production and use. **Western Engineering,** June 1915.

INCREASING CAPACITY OF OIL-FIRED BABCOCK & WILCOX BOILERS.
By *J. E. Woodbridge.* *Page* 511
Describes the effect on the actual performance of several boilers by the removal of the bridge-wall from the boiler setting. **Western Engineering,** June 1915. Illustrated.

TESTS OF MELTING-POINT OF CAST-IRON TUBES.
By *R. F. Chevalier.* *Page* 513
Describes some tests of the comparative behavior of different kinds of cast-iron tubes under high temperatures. **Western Engineering,** June 1915. Illustrated.

REINFORCED-CONCRETE TILE.
By *W. J. Schlick.* *Page* 515
Discusses the present tendency in drainage practice toward the use of larger tile and deeper trenches. Reinforced concrete tile is now being used extensively to meet these conditions. The results of a series of tests on tile with different kinds of reinforcement are given. **Western Engineering,** June 1915.

MUNICIPAL TUNNEL AND HIGHWAY AT RICHMOND, CALIFORNIA. *Page* 518
Methods of construction of a concrete-lined highway tunnel over 700 ft. long are described. The arch section was removed first and the concrete lining placed before the core was excavated. The concrete was transported by the pneumatic method. **Western Engineering,** June 1915. Illustrated.

SNOQUALMIE-PASS TUNNEL. *Page* 521
This tunnel is on the Chicago, Milwaukee & Puget Sound railway and was the first important tunnel in America to be excavated by the European or bottom-heading method. **Western Engineering,** June 1915. Illustrated.

LARGE 'COYOTE-HOLE' BLAST AT CEMENT QUARRY. *Page* 522
Description of blast near Riverside, California, where nearly 60 tons of powder was used and over 350,000 tons of rock broken. **Western Engineering,** June 1915. Illustrated.

DEPARTMENTS

INDUSTRIAL PROGRESS: *Page* 524
Exhibit of Babcock & Wilcox Co. at Panama-Pacific Exposition; Exhibit of Harron, Rickard & McCone at Panama-Pacific Exposition; Edward R. Bacon Co Exhibit at Panama-Pacific Exposition; The Peterson Oil-Filter; The Cobb Railroad Crossing; Exhibit of Yuba Construction Co. at Panama-Pacific Exposition.

HINTS ON PRACTICE: *Page* 526
Concrete Curb and Gutter with Plain Finish; Cleaning Irrigation Ditches with Dynamite.

BOOK REVIEWS: *Page* 528

ENGINEERS' NOTE BOOK: *Page* 527
Solution of problems by the Use of the 'Log-Log' Slide-Rule. By E. L. Jones.

CONSTRUCTION NEWS SUMMARY: *Page* 529

ENGINEERING SOCIETIES: *Page* 533

COMING CONVENTIONS: *Page* 533

PERSONAL: *Page* 534

OBITUARY: *Page* 534

COMMERCIAL PARAGRAPHS: *Page* 534

Generated on 2024-09-30 00:46 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Are you interested in good roads?

Section of Brick Pavement

The illustrated displays of road materials are part of the Standard Oil Company exhibit in the Palace of Mines and Metallurgy at the Panama-Pacific International Exposition.

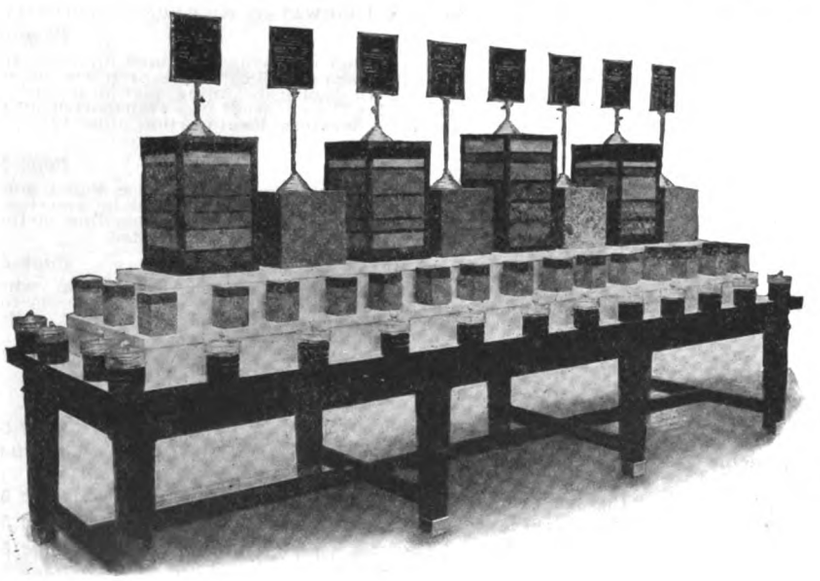
Send for our new Bulletin No. 6 on ROAD MATERIALS and CALOL ASPHALTUM, describing scientifically our exhibit in the Palace of Mines and Metallurgy at the Panama-Pacific Exposition.

In this bulletin we explain in detail the composition of various blocks of road material on exhibition — Asphaltic Concrete, Portland Cement Concrete, Sheet Asphalt, and Asphaltic Concrete (Topeka Specification)—giving amounts of constituent materials and gradings of mineral aggregate, by percentage and by weight.

Those interested in good road building will find this bulletin of value. Sent free.

Calol Asphaltum

Calol Asphaltum is a refinery product run to positive specified standards to give perfect uniformity. It has the proper ductility, consistency and adhesiveness to assure best possible results in paving, roofing, water proofing, pipe dipping, etc. D, E, F, and Liquid Grades, shipped in barrels and especially equipped tank cars; B and C Grades in barrels only.



Road Materials

WRITE FOR PARTICULARS AND PRICES

Address
Department of Asphaltum

Standard Oil Company
(CALIFORNIA)

Standard Oil Building
San Francisco

Generated on 2024-09-30 00:46 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Professional Directory

AMERICAN ENGINEERING CORPORATION
C. E. Grunsky, Pres.
All Branches of Engineering
Mechanics Institute Bldg., San Francisco.

ARNOLD, Ralph, Cable: Ralfarnoil.
Geologist and Petroleum Engineer
Union Oil Bdg., Los Angeles, Cal.
115 Broadway, New York.
No. 1, London Wall Bdgs., London, E. C.

AUSTIN, H. D.,
Electrical and Mechanical Engineer
Investigations, Reports, Plans and Specifications.
Vallejo, Cal.

BENJAMIN, Edward H.,
Consulting Mining Engineer
805 Linden St., Oakland, Cal.

BERRY, S. L.,
Hydraulic and Mechanical Engineer
329 Rialto Bdg., Phone Sutter 3432,
San Francisco, Cal.

BRADLEY, Fred W.,
Mining Engineer
Crocker Bdg., San Francisco.
Cable: Basalt. Code: Bedford McNeill.

BYLLESBY, H. M. & CO
Engineers
Electric Light, Gas, Street Railway and Water Power Properties. New York:
Chicago: Insurance Ex Bdg. Trinity Bdg.

CHODZKO, A. E.,
Consulting Mechanical Engineer
Specialty: Compressed Air.
647 Phelan Bdg., San Francisco.

DICKIE, G. W.,
Consulting Eng. and Naval Architect
Past Manager Am. Soc. M. E., Mem. of Council Soc. Naval Architects and Marine Engineers.
24 California St., San Francisco.

EASTWOOD, John S., C. E.,
Consulting Engineer
EASTWOOD MULTIPLE ARCH DAMS.
Hearst Bdg., San Francisco, Cal.

ENGLISH, R. T.,
Consulting Civil Engineer
Care Chico Construction Co.
Chico, Cal.

FALKENBURG & LAUCKS,
Consulting, Analytical, Inspecting
Chemists, Metallurgists, Engineers.
Seattle, Wash.

FOWLER, Chas. Evan,
M. Am. Soc. C. E., M. Can. Soc. C. E.
Consulting Civil Engineer
Bridges, Structures, Foundations.
River and Harbor Improvement.
504 Central Bdg., Seattle, U. S. A.

FOX, Chas. Kirby,
Civil Engineer
Irrigation, Investigation, Construction and Valuation.
Pomona, Cal. Code: Bedford McNeill.

HAAS, Herbert,
Consulting Engineer
Diesel Engine Power.
524 Merchants Exchange Bdg., San Francisco.

HAGER, Dorsey,
Geological Engineer
Expert on Oil Production.
Hotel Tulsa Bdg., Tulsa, Oklahoma.

HUBER, Frederick W.,
Consulting Chemical Engineer
Structural Materials and Industrial Research.
Title Insurance Bdg., Los Angeles, Cal.

JOHNSON & HUNTLEY,
Geologists
Oil and Gas Problems.
206 State Hall, University of Pittsburgh, Pittsburgh, Pa.

JONES, E. L., Electrician,
Consulting Engineer—Electrical and Mechanical
Formerly with U. S. Government.
53 N. Second St., San Jose, Cal.

LEE, Charles H., Asso. M. Am. Soc. C. E.
Hydraulic Engineer
Specialty—Underground water problems.
1102 Central Bdg., Los Angeles.

LE GRAND, J. Mastella,
Hydraulic and Structural Engineer.
Irrigation, Mills and Power Plants, Plans, Specifications, Estimates and Reports.
1102 Central Bdg., Los Angeles, Cal.

LEONARD & DAY,
Consulting Engineers
Bridges, Buildings and Foundations.
528-30 Rialto Bdg., San Francisco.

LINDEN, H. E.,
Hydro-Electric Engineer
Specialty: Water Power and Irrigation.
Bishop, Inyo County, Cal.

LINSCOTT DRILLING CO.,
Borings for dams and heavy construction.
Gas, Oil and Water Wells Drilled.
Balboa Bldg., San Francisco.

LIPPINCOTT, J. B.,
Consulting Engineer
Specialty: Water Supply Problems.
Central Bdg., Los Angeles.

W. M. Ledbetter, President — J. H. Zeitler, Secretary — J. C. Wright, Engineer
MERCEREAU BRIDGE & CONSTRUCTION CO.
Engineers and Contractors
Bridges, Wharfs and Heavy Concrete Construction.
471 Pacific Electric Bdg., Los Angeles.

MAYBERRY & PARKER,
Architectural Engineers
Structural Steel. Reinforced Concrete.
472 Pacific Electric Bdg., Los Angeles.

McLAUGHLIN, R. P.,
Consulting Geologist and Engineer, Oil and Metal Mining
Cable: Roylaugh. 818 Mills Bdg., San Francisco.

MILLER, H. C.,
Engineering and Construction
Civil, Mining, Drainage, Water Development, Reinforced Concrete.
Bishop, Inyo County, California

MORRIN, Thomas,
Mem. A. S. M. E., Mem. A. S. H. & V. E.
Consulting Mechanical Engineer
Power Plants, Water Works, Heating, Ventilation
Phelan Bdg., San Francisco Kearny 3646

PECK, Myron H.,
Civil Engineer
Care Standard American Dredging Co.,
Vallejo, Cal.

SANDERSON & PORTER,
Engineers and Contractors
Reports, Designs, Construction, Management, Hydroelectric, Railway Light and Power Properties, Oil Pipe Lines. New York, San Francisco.

STILL, Alfred,
Consulting Electrical Engineer.
Fellow Am. I. E. E.
Purdue University, La Fayette, Indiana.

STOVALL, S. L.,
Consulting Electrical and Hydraulic Engineer
Stovall Concrete Slab Conduit.
417 Foxcroft Bdg., San Francisco, Cal.

STROUD, B. K.,
Petroleum Engineer
First National Bank Bdg., Oakland, Cal.

TRASK, F. E.,
Consulting Civil & Hydraulic Engineer
Specialty: Water Works, Power Plants, Reports.
Union Oil Bdg., Los Angeles, Cal.

WARING, Clarence A.,
Geologist
Specialty: Oil and water supply problems.
580 McAllister St., San Francisco, Cal.

WHITHAM, Paul,
Consulting Civil Engineer
Railway, Port, Terminal and City Planning Work.
Seattle, U. S. A.

WOLD, Eric,
Consulting Engineer
Roads, Pavements, Municipal Improvements.
727 Hearst Bdg., San Francisco.

WOOD, Chester Earl,
Consulting Engineer
Mining, Natural Gas and Hydraulics.
515 E. 14th St., Oakland, Cal.

Generated on 2024-09-30 00:46 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Telephone Sutter 2656

Moffett & Mead

Contractors

505 Monadnock Bldg. San Francisco

California Road and Street Improvement Company

Contractors for

Asphalt Pavements, Macadam, Oiled Macadam and Cement and Concrete Work

Fresno, California

Office: New Holland Building, Rooms 217-218.
P. O. Box 591. Phone 1466.

Yards: S. P. R. R. Reservation, Cor. Neilson and West Avenue.

Producers of Sand, Gravel and Ballast

Telephone Douglas 4769

F. ROLANDI

GENERAL CONTRACTOR

801-806 Bank of Italy Building
5?0 Mont.omery Street

San Francisco, Cal.

M. CARNEY, Pres. J. J. CARNEY, Sec'y

CARNEY BROS. INC.

RAILROAD BUILDERS
General Contractors

San Francisco
Phone Franklin 9074

Mayfield, Cal.
Phone Palo A'to 637x

Work Stock for Rent in Carload Lots.

Mem. Am. Soc. C. E. Mem. Am. Soc. M. E.

S. L. G. KNOX

CONSULTING ENGINEER

Dredges and Excavating Machinery

PACIFIC DREDGING COMPANY

Hydraulic Dredging Levee Building

FLATIRON BUILDING, SAN FRANCISCO

Fairchild-Gilmore-Wilton Company

PAVING CONTRACTORS

MAIN OFFICE—Pacific Electric Bdg., Los Angeles
BRANCHES—San Diego, San Pedro, Wilmington, Long Beach, Pasadena
QUARRIES—Spadra, Corona, and Victorville

L. S. QUIMBY

CONSULTING ENGINEER

818 Foxcroft Building, San Francisco

Reports, Investigations, Surveys and Estimates

Irrigation and General Construction

Phone Sutter 2034

J. R. CAHILL

Assoc. Mem. A. S. C. E.

General Contractor for Engineering Construction

460 Montgomery St.
Room 306

San Francisco

Generated on 2024-09-30 00:48 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

WHERE TO BUY IT ON THE PACIFIC COAST

ASPHALT Page.
Fairchild-Gilmore-Wilton Co. 14
Standard Oil Co. 12

ASPHALT PLANTS
Bacon, Edward R., & Co. 4
Harron, Rickard & McCone 3
Young, A. L., Machy. Co. 18

BITUMASTIC ENAMEL
Hill, Hubbell & Co. 18

BOILERS
Allis-Chalmers Mfg. Co. 19
Chalmers & Williams 4
Hendy Iron Works, Joshua 9
Llewellyn Iron Works 19
Moore & Co., Chas. C., Engineers 19
Schaw-Batcher Co. 17

CARRIERS
Browning Co., The 17
Llewellyn Iron Works 19

CEMENT, PORTLAND
Cowell, Henry, Lime & Cement Co. ..... Back Cover
Pacific Portland Cement Co., Con 21
Santa Cruz Portland Cement Co. ..... —
Standard Portland Cement Corporation 2
Union Lime Co. 7

COAL
Allen, Charles R. 16

COMPRESSORS, AIR
Allis-Chalmers Mfg. Co. 19
Chalmers & Williams 4
Harron, Rickard & McCone 3
Hendy Iron Works, Joshua 9
Moore & Co., Chas. C., Engineers 19
Platt Iron Works Co. 4

CONCRETE MIXERS
Bacon, Edward R., & Co. 9, 20
Harron, Rickard & McCone 3
Jaeger Machine Co. 9
Koehring Machine Co. 3
Municipal Eng. & Cont. Co. 19
Rapid Heated Mixer Co. ..... —
Waterloo Cement Machy. Corp. ..... —
Young, A. L., Machy. Co. 18

CONTRACTORS, GENERAL
Cahill, John R. 14
California Road and Street Improvement Co. 14
Carney Bros. 14
Contra Costa Construction Co. 15
Daniel Contracting Co. 15
Eastwood Construction Co. 17
Fairchild-Gilmore-Wilton Co. 14
Moffett & Mead 14
Pacific Concrete Placing Co. 9
Pacific Dredging Co. 14
Rolandi, F. 14
Spring Construction Co. 15
Stover, W. A. 15
Twohy Bros. Co. 15

CONTRACTORS' MACHINERY
Bacon, Edward R., & Co. 4, 7, 9, 20
Brown Hoisting Machinery Co. 17
Browning Co., The 17
Chalmers & Williams 4
Harron, Rickard & McCone 3
Hendy Iron Works, Joshua 9
Municipal Eng. & Cont. Co. 19
Waterloo Cement Machy. Corp. ..... —
Young, A. L., Machy. Co. 18

CRANES
Bacon, Edward R., & Co. 7
Browning Co., The 17
Brown Hoisting Machinery Co. 17
Hendy Iron Works, Joshua 9

CRUSHERS
Allis-Chalmers Mfg. Co. 19
Bacon, Edward R., & Co. 4
Chalmers & Williams 4
Hendy Iron Works, Joshua 9

CULVERTS, CORRUGATED
California Corrugated Culvert Co. 10
Corrugated Culvert Companies 10
Western Pipe & Steel Co. 7

DAM CONSTRUCTION
Eastwood Construction Co. 17

DITCH DIGGERS
Bacon, Edward R., & Co. 4
Browning Co., The 17
Buckeye Traction Ditcher Co. 18
Ware, R. F. 8
Young, A. L., Machy. Co. 18

DREDGES, DIPPER
Yuba Construction Co. 19

ELECTRICAL MACHINERY
Allis-Chalmers Mfg. Co. 19
Westinghouse Electric & Mfg. Co. ..... —

ENGINEERS (see page 15)

ENGINES, DIESEL, AND OIL
Allis-Chalmers Mfg. Co. 19
Faget Engineering Co. 6
Lund, Henry, & Co. 18
Moore & Co., Chas. C., Engineers 19

(Continued on Next Page)

J. H. Spring, President W. G. Appleton, Manager

Spring Construction Co.

Street Construction Contractors

First National Bank Building
Berkeley, Cal.
Phone Berkeley 75

Twohy Brothers Company

RAILROAD CONTRACTORS

First National Bank Building, San Francisco

J. H. HOPPS JOHN DANIEL

Daniel Contracting Co.

ENGINEERS AND CONTRACTORS

503 Market Street, San Francisco
Telephone Kearny 1803

Contra Costa Construction Co.

Contracting Engineers

2323 Shattuck Avenue, Berkeley
Telephone, Berkeley 1176

330 Tenth Street, San Francisco
Telephone, Market 6502

Generated on 2024-09-30 00:48 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

"Blessed are they that remove friction"

THEO F. DREDGE

POWER STATION EQUIPMENT
SCIENTIFIC LUBRICATION

817-819 Monadnock Building, San Francisco
Telephone Sutter 3497

RICHARDSON-PHENIX OILING SYSTEMS LUBRICATORS OIL FILTERS

Piping Installations, Valves and Fittings,
Steam Traps, Pressure Regulators,
Separators, Etc., Etc.

THOMPSON BROS.

General Contractors

W. A. STOVER, Superintendent Fresno, Cal.

CHARLES R. ALLEN

119 Chronicle Bldg., San Francisco, Cal.

Exclusive Distributor of

CENTRAL COAL & COKE CO.'S
Peacock Rock Springs Coal, Wyoming.
Bonanza-Semi Anthracite, Arkansas.

UTAH GAS & COKE CO.'S
Salt Lake Gas Coke (Furnace), Utah.

BEAR RIVER COAL CO.'S
American Cannel (Domestic), Wyoming.

YOLANDE COAL & COKE CO.'S
Foundry & Smelting Coke, Alabama.
Prepared Blacksmith Coal, Alabama.

Minimum shipments: Coal 30 tons, Coke 15.

WANTED

Responsible experienced Culvert salesmen calling on Road Commissions, State and County Highway Engineers, etc., to handle high grade fast selling concrete Culvert form. Extensively advertised. New York State Standard. Give full particulars.

Concrete Form Co., Monadnock Bldg., San Francisco

Send for a Free Sample

of the WESTERN ENGINEERING Daily Construction News Service. It's a business builder and is inexpensive.

Western Engineering, 420 Market Street, San Francisco

WHERE TO BUY IT ON THE PACIFIC COAST

(Continued from Preceding Page)

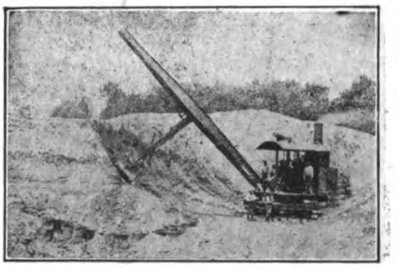
	Page.
ENGINES, GAS	
Allis-Chalmers Mfg. Co.	19
ENGINES, STEAM	
Allis-Chalmers Mfg. Co.	19
Hendy Iron Works, Joshua	9
Moore & Co., Chas. C., Engineers	19
EXCAVATING CONTRACTOR	
Ware, R. F.	8
EXPLOSIVES	
California Trojan Powder Co.	19
GENERATORS, ELECTRIC	
Allis-Chalmers Mfg. Co.	19
Westinghouse Electric & Mfg. Co.	—
GIANTS	
Hendy Iron Works, Joshua	9
Pelton Water Wheel Co.	19
GRAVEL, CONCRETE MIX	
Grant Gravel Co.	17
HOISTING MACHINERY	
Bacon, Edward R., & Co.	4
Brown Hoisting Machinery Co.	17
Browning Co., The	17
Harron, Rickard & McCone	3
Hendy Iron Works, Joshua	9
Llewellyn Iron Works	19
HYDRAULIC SUPPLIES	
California Corrugated Culvert Co.	10
Corrugated Culvert Companies	10
Hendy Iron Works, Joshua	9
Krogh Pump Mfg. Co.	20
Sacramento Pipe Works	19
Schaw-Batcher Co.	17
Western Pipe & Steel Co.	7
LUBRICATION SPECIALITES	
Dredge, Theo F.	16
MOTORS	
Allis-Chalmers Mfg. Co.	19
Westinghouse Electric & Mfg. Co.	—
PAVING MATERIALS	
Cowell, Henry, Lime & Cement Co.	Back Cover
Grant Gravel Co.	17
Pacific Portland Cement Co., Con.	21
Santa Cruz Portland Cement Co.	—
Standard Portland Cement Corporation	2
Standard Oil Co.	12
Union Lime Co.	7
PIPE COVERING	
Hill, Hubbell & Co.	18
PIPE, GENUINE IRON WROUGHT	
Faget Engineering Co.	6
Woods, Huddart & Gunn	17
PIPE, INGOT IRON CORRUGATED	
Corrugated Culvert Companies	10
PIPE, RIVETED STEEL AND IRON	
Faget Engineering Co.	6
Pelton Water Wheel Co.	19
Sacramento Pipe Works	19
Schaw-Batcher Co.	17
Western Pipe & Steel Co.	7
Woods, Huddart & Gunn	17
PIPE, WOOD	
Pacific Tank & Pipe Co.	6
Redwood Manufacturers Co.	8
POWER PLANTS	
Allis-Chalmers Mfg. Co.	19
Chalmers & Williams	4
Dredge, Theo F.	16
Hendy Iron Works, Joshua	9
Moore & Co., Chas. C., Engineers	19
Westinghouse Electric & Mfg. Co.	—
PUMPS	
Allis-Chalmers Mfg. Co.	19
American Well Works	5
Byron Jackson Iron Works	4
Harron, Rickard & McCone	3
Hendy Iron Works, Joshua	9
Krogh Pump Mfg. Co.	20
Moore & Co., Chas. C., Engineers	19
Platt Iron Works Co.	4
Yuba Construction Co.	19
RAILINGS, PIPE	
Sacramento Pipe Works	19
ROAD OILS	
Standard Oil Co.	12
ROAD MACHINERY	
Bacon, Edward R., & Co.	4, 7, 9, 20
Browning Co., The	17
Chalmers & Williams	4
Koehring Machine Co.	3
Waterloo Cement Machy. Corp.	—
Young, A. L., Machy. Co.	18
Yuba Construction Co.	19
ROAD ROLLERS	
Bacon, Edward R., & Co.	4
Erie Machine Shops	4
Young, A. L., Machy. Co.	18

Generated on 2024-09-30 00:47 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

WHERE TO BUY IT ON THE PACIFIC COAST

	Page.
SEWER DITCHING MACHINES	
Bacon, Edward R., & Co.	4
Buckeye Traction Ditcher Co.	19
Ware, R. F.	8
Young, A. L., Machy. Co.	18
SEWER PIPE	
California Corrugated Culvert Co.	10
Corrugated Culvert Companies	10
Faget Engineering Co.	6
Pacific Tank & Pipe Co.	6
Redwood Manufacturers Co.	8
TAMPERS, POWER	
Bacon, Edward R., & Co.	4
TANKS, STEEL	
Schaw-Batcher Co.	17
Western Pipe & Steel Co.	7
TANKS, WOOD	
Pacific Tank & Pipe Co.	6
Redwood Manufacturers Co.	8
TRACTORS	
Allis-Chalmers Mfg. Co.	19
Yuba Construction Co.	19
TRANSMISSION MACHINERY	
Allis-Chalmers Mfg. Co.	19
Chalmers & Williams	4
Harron, Rickard & McCone	3
Hendy Iron Works, Joshua	9
Platt Iron Works Co.	4
TURBINES, HYDRAULIC	
Allis-Chalmers Mfg. Co.	19
Harron, Rickard & McCone	3
Hendy Iron Works, Joshua	9
Moore & Co., Chas. C., Engineers	19
Pelton Water Wheel Co.	19
TURBINES, STEAM	
Allis-Chalmers Mfg. Co.	19
Moore & Co., Chas. C., Engineers	19
Westinghouse Electric & Mfg. Co.	—
WATER MAINS	
California Corrugated Culvert Co.	10
Corrugated Culvert Companies	10
Faget Engineering Co.	6
Pacific Tank & Pipe Co.	6
Sacramento Pipe Works	19
Schaw-Batcher Co.	17
Western Pipe & Steel Co.	7
WATER WHEELS	
Allis-Chalmers Mfg. Co.	19
Hendy Iron Works, Joshua	9
Moore & Co., Chas. Co., Engineers	19
Pelton Water Wheel Co.	19
Platt Iron Works Co.	4

BROWNING LOCOMOTIVE CRANES



Buckets
Magnets
Grapples
Ditchers
Wreckers
Pile Drivers
Shovels

Sales Offices:
New York Philadelphia
Chicago San Francisco

THE BROWNING CO.
Cleveland, O.

RIVETED STEEL PIPE

Storage or Pressure Tanks

Gas Holders Boilers Well Casing

High Pressure and Light Riveted Pipe
Also Irrigation Pipe

Factories at South San Francisco and at Sacramento
Get our Estimates

SCHAW-BATCHER CO.

356 Market Street, San Francisco
217 J Street, Sacramento

Reinforcing bars cut to length, fabricated or placed.

Steel Castings.

Wrought Iron or Steel Pipe.

Lock Bar Pipe, sizes 20″ to 72″ diameter.

Suction Dredges.

WOODS, HUDDART & GUNN
444 MARKET ST. San Francisco

"Grant Concrete Mix"

The only properly proportioned mix in this market. Composed of hard, clean, fresh-water gravel, free from sandstone, and contains about 25% of crushed rock and necessary amount of sand.

We Guarantee Less Than 25% Voids

Used on many important first-class buildings and road work. Accepted on all City, State and U. S. Government work.

Grant Gravel Company
Flatiron Bldg. Phone Sutter 1582
SAN FRANCISCO

ENGINEERS AND BUILDERS OF
EASTWOOD MULTIPLE ARCHED DAMS

New Big Bear Valley Dam, California

EASTWOOD CONSTRUCTION CO.
1020-1-2 Hearst Building SAN FRANCISCO

BROWNHOIST CRANES

Locomotive Cranes
Overhead Cranes
Crabs and Winches
Tramrail Systems
Trolleys
Electric Hoists
Buckets and Tubs.

Ask for Catalogs.

BROWN HOISTING MACHINERY CO., Cleveland, O.
San Francisco Offices: Monadnock Bldg.

Generated on 2024-09-30 00:46 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

A perfect trench at one cut

and variable width trenches with a single wheel are the big features offered for a quarter of a century in the

Buckeye Ditcher

(Traction Drive)

Send for the catalog which tells in detail how they are made, why they stand the wear and tear, and shows photos of many machines at work.

We would like to tell you about repeat orders from California users.

The Buckeye Traction Ditcher Co., Findlay, Ohio, makes a full line of traction tile, and open ditchers, trench and pipe-line excavators, clay and peat diggers.

Where would you like the catalog sent?

A. L. YOUNG MACHINERY COMPANY
26-28 FREMONT ST., SAN FRANCISCO

BITUMASTIC ENAMEL

Will absolutely prevent corrosion of iron and steel. It is a particularly effective coating for

PIPE LINES TANKS STAND PIPES
SIPHONS BRIDGES MARINE WORK

in fact, any or all plate construction.

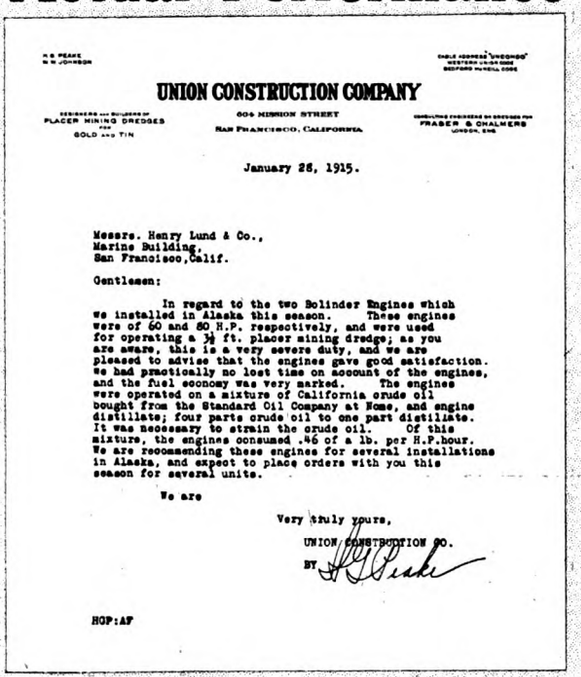
Salt marsh or alkali soils do not affect Bitumastic.

We are now applying Bitumastic Solution and Enamel to 170 miles of 8 and 10-in. pipe line for the Valley Pipe Line Co.

Let us give you the list of numerous other places where Bitumastic Enamel has been used. We are specialists on pipe lines and protective coatings. Consult with us freely.

HILL, HUBBELL & CO.
FIFE BUILDING SAN FRANCISCO

Actual Performance



UNION CONSTRUCTION COMPANY

PLACER MINING DREDGES FOR GOLD AND TIN

606 MISSION STREET
SAN FRANCISCO, CALIFORNIA.

FRASER & CHALMERS

January 28, 1915.

Messrs. Henry Lund & Co.,
Marine Building,
San Francisco, Calif.

Gentlemen:

In regard to the two Bolinder Engines which we installed in Alaska this season. These engines were of 60 and 80 H.P. respectively, and were used for operating a ¾ ft. placer mining dredge; as you are aware, this is a very severe duty, and we are pleased to advise that the engines gave good satisfaction. We had practically no lost time on account of the engines, and the fuel economy was very marked. The engines were operated on a mixture of California crude oil bought from the Standard Oil Company at Home, and engine distillate; four parts crude oil to one part distillate. It was necessary to strain the crude oil. Of this mixture, the engines consumed .46 of a lb. per H.P.hour. We are recommending these engines for several installations in Alaska, and expect to place orders with you this season for several units.

We are

Very truly yours,
UNION CONSTRUCTION CO.
BY H. G. Peake

HGP:AF

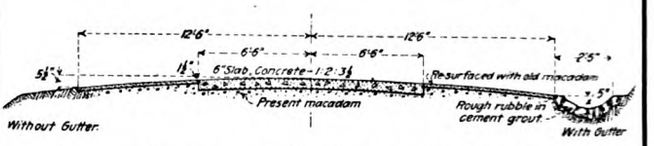
HENRY LUND & CO.
Marine Building
Front and California Streets, San Francisco

YOU NEED ROAD BUILDING DATA IN COMPACT, ACCESSIBLE FORM

The HARGER and BONNEY

Highway Engineers' Handbook

Gives such data for field and office use.



Gives cost data—specifications—tables of quantities and properties of materials and formulæ that every road man uses.

Authors have had practical training in New York State Department of Highways. They have had unusual facilities for collecting data. They have been assisted by leading road engineers and manufacturers.

SPECIAL FEATURES:

A great variety of special tables and general mathematical tables.
An unusually complete set of curve tables requiring no interpolation.
Tables of quantities of materials—cement, sand, stone, binder, filler, etc., for macadam, concrete, brick and other kinds of roads.
Full and complete cost data for estimating all classes of roadwork.
Specifications for all classes of work and material employed.
Full details of construction.
Tables of earthwork, macadam, concrete, reinforcement, oils, etc. These are time-savers to the office man.
The survey—details, suggestions, tables, examples, mapping, etc.

493 pages, 4 x 7. Flexible leather. $3.00 net, postpaid.

WESTERN ENGINEERING, San Francisco

Generated on 2024-09-30 00:49 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

CHAS. C. MOORE & CO. ENGINEERS INC.

Contractors for Complete Plants
HIGH GRADE MACHINERY

Home Office: SAN FRANCISCO, 40 First St.

Salt Lake City Kearns Bldg. | **New York City** Fulton Bldg. | **Los Angeles** I. N. Van Nuys Bldg.
Tucson Santa Rita Hotel Bldg. | **Seattle** Mutual Life Bldg. | **Portland** Spalding Bldg.

TROJAN EXPLOSIVES

The Most Powerful Made
Safe and Economical

Manufactured on a solid base and do not contain any liquid explosive ingredient.

Will not freeze **Will not exude**
Will not give off noxious gases
No thawing
No leaking
No headaches

California Trojan Powder Company

Phelan Building **San Francisco, Cal.**
Railway Exchange Bdg. **Portland, Oregon**

ALLIS-CHALMERS MANUFACTURING CO.,

Engineers — Manufacturers

Apparatus for the generation and application of power by Electricity, Steam, Water, Air, Gas and Oil,

For the use of the

Electrical, Mechanical, Mining, and Civil Engineer and Contractor.

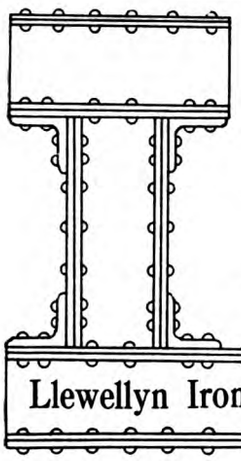
Pacific Coast Offices:
Rialto Building—San Francisco
Title Insurance Building—Los Angeles

THE YUBA CONSTRUCTION CO.

YUBA HYDRAULIC DREDGES
YUBA GOLD DREDGES
YUBA CENTRIFUGAL PUMPS
YUBA BALL TREAD TRACTORS

THE YUBA CONSTRUCTION CO.

433 California Street, San Francisco | **Works: Marysville, California**



STRUCTURAL STEEL
of every description fabricated and erected.

Riveted Steel Tanks and Pressure Pipes
for petroleum, gas and water.

All kinds of Contractors' Machinery
designed and built.

Passenger and Freight Elevators
of every description and for all purposes.

Engineers, Fabricators and Erectors
Let us submit you estimates.

Llewellyn Iron Works — Los Angeles

Austin Cube Paver

With MULTIPEDAL Traction

Made in two sizes, 13½ and 22 cubic feet per batch. It adds multipedal traction to all the features that Austin Cube Pavers have had in past years. These are the wide open, quick acting loading skip; cube drum, which is the guarantee of perfectly mixed concrete, non-slopping device, automatic dump, self-righting bucket that takes the whole batch at one time without tilting; power swing boom; all Austin features that mean efficiency and economy.

San Francisco Office and Warehouse, 473-485 SIXTH ST.

Municipal Engineering & Contracting Co.

Main Office—Railway Exchange Bldg., Chicago

The Pelton Water Wheel Co.

Sole Manufacturers of Pelton Wheels

99 West Street, New York, N. Y.
2314 Harrison Street, San Francisco, Cal.

1

Sacramento Pipe Works

MANUFACTURERS

SHEET STEEL RIVETED PIPE
WELL CASING and AIR PIPE

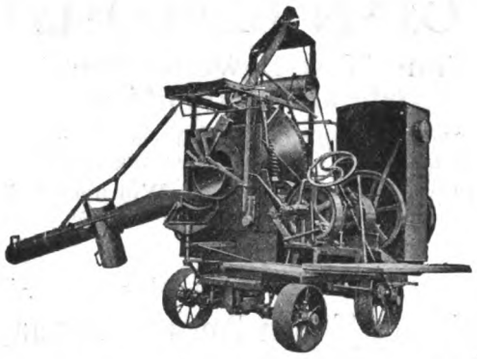
WHOLESALE DISTRIBUTORS

Standard Pipe **Screw Joint Casing**
Pipe and Casing Fittings **Valves and Brass Goods**

Hydraulic Engineers and Contractors

SACRAMENTO, CAL.

Generated on 2024-09-30 00:55 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



FOOTE PAVING MIXERS

Reliable and Efficient

EVERY FOOTE A MIXER

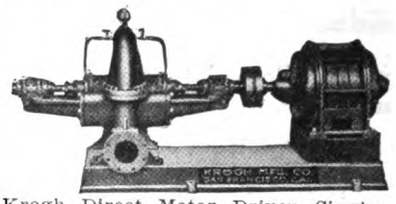
Notice the Operator's Platform, it enables him to reach every lever on the machine without hardly moving. And only one man is required to handle the whole machine.

EDWARD R. BACON COMPANY

San Francisco and Los Angeles

Krogh Pump Mfg. Co.

151 Beale St., SAN FRANCISCO **206 N. Los Angeles St., LOS ANGELES**



Krogh Direct Motor Driven Single-Stage Horizontally Split Pump.

Krogh Pumps are built for all conditions and in all sizes.

Krogh Vertical Sinker

They are absolutely water balanced and make end thrust impossible. Remember we build Deep Well Turbines, Deep Well Cylinders, Water Works Pumps, Dredge, Tailings and Gravel Pumps; also City Sewerage Pumping Plants. All high class and efficient Pumps with features embodied as a result of 40 years' experience—and practical experience, too.

ALPHABETICAL INDEX TO ADVERTISERS

WHERE TO BUY ON THE PACIFIC COAST, PAGE 15

	Page.
ALLEN, CHARLES R.	16
ALLIS-CHALMERS MFG. CO.	19
AMERICAN WELL WORKS	5
BACON, EDWARD R., & CO.	4, 7, 9, 20
BROWNING CO., THE	17
BROWN HOISTING MACHINERY CO.	17
BUCKEYE TRACTION DITCHER CO.	18
BYRON JACKSON IRON WORKS	4
CAHILL, JOHN R.	14
CALIFORNIA CORRUGATED CULVERT CO.	10
CALIFORNIA ROAD & STREET IMPROVEMENT CO.	14
CALIFORNIA TROJAN POWDER CO.	19
CARNEY BROS.	14
CHALMERS & WILLIAMS	4
COAST CULVERT & FLUME CO.	10
CONTRA COSTA CONSTRUCTION CO.	15
CORRUGATED CULVERT COMPANIES	10
COWELL, HENRY, LIME & CEMENT CO.	Back Cover
DANIEL CONTRACTING CO.	15
DE LA VERGNE MACHINE CO.	—
DREDGE, THEO. F.	16
EASTWOOD CONSTRUCTION CO.	17
ERIE MACHINE SHOPS	4
FAGET ENGINEERING CO.	6
FAIRCHILD-GILMORE-WILTON CO.	14
FOOTE CONCRETE MACHINERY CO.	20
GENERAL ELECTRIC CO.	—
GRANT GRAVEL CO.	17
HARDESTY MFG. CO., R.	10
HARRON, RICKARD & McCONE	3
HENDY IRON WORKS, JOSHUA	9
HILL, HUBBELL & CO.	18
JAEGER MACHINE CO.	9
KNOX, S. L. G.	14
KOEHRING MACHINE CO.	3
KROGH PUMP MFG. CO.	20
LLEWELLYN IRON WORKS	19
LONE STAR CULVERT CO.	10
LUND, HENRY & CO.	18
MOFFETT & MEAD	14
MONTANA CULVERT CO.	10
MOORE & CO., CHAS. C., ENGINEERS	19
MUNICIPAL ENGINEERING & CONTRACTING CO.	19
NEBRASKA CULVERT & MFG. CO.	10
PACIFIC CONCRETE PLACING CO.	9
PACIFIC DREDGING CO.	14
PACIFIC PORTLAND CEMENT CO. CON.	21
PACIFIC TANK & PIPE CO.	6
PELTON WATER WHEEL CO.	19
PLATT IRON WORKS CO.	4
PROFESSIONAL DIIRECTORY	13
QUIMBY, L. S.	14
RAPID HEATED MIXER CO.	—
REDWOOD MANUFACTURERS CO.	8
ROLANDI, F.	14
SACRAMENTO PIPE WORKS	19
SANTA CRUZ PORTLAND CEMENT CO.	—
SCHAW-BATCHER CO.	17
SIOUX FALLS METAL CULVERT CO.	10
SPOKANE CORRUGATED CULVERT & TANK CO.	10
SPRING CONSTRUCTION CO.	15
STANDARD OIL CO.	12
STANDARD PORTLAND CEMENT CORPORATION	2
THOMPSON BROS. CO.	16
TWOHY BROS. CO.	15
UNION LIME CO.	7
UTAH CORRUGATED CULVERT & FLUME CO.	10
WARE, R. F.	8
WATERLOO CEMENT MACHY. CORPN.	—
WESTERN METAL MFG. CO.	10
WESTERN PIPE & STEEL CO.	7
WESTINGHOUSE ELECTRIC & MFG. CO.	—
WOODS, HUDDART & GUNN	17
YOUNG MACHINERY CO., A. L.	18
YUBA CONSTRUCTION CO.	19

Generated on 2024-09-30 00:49 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PERMANENT PAVEMENTS

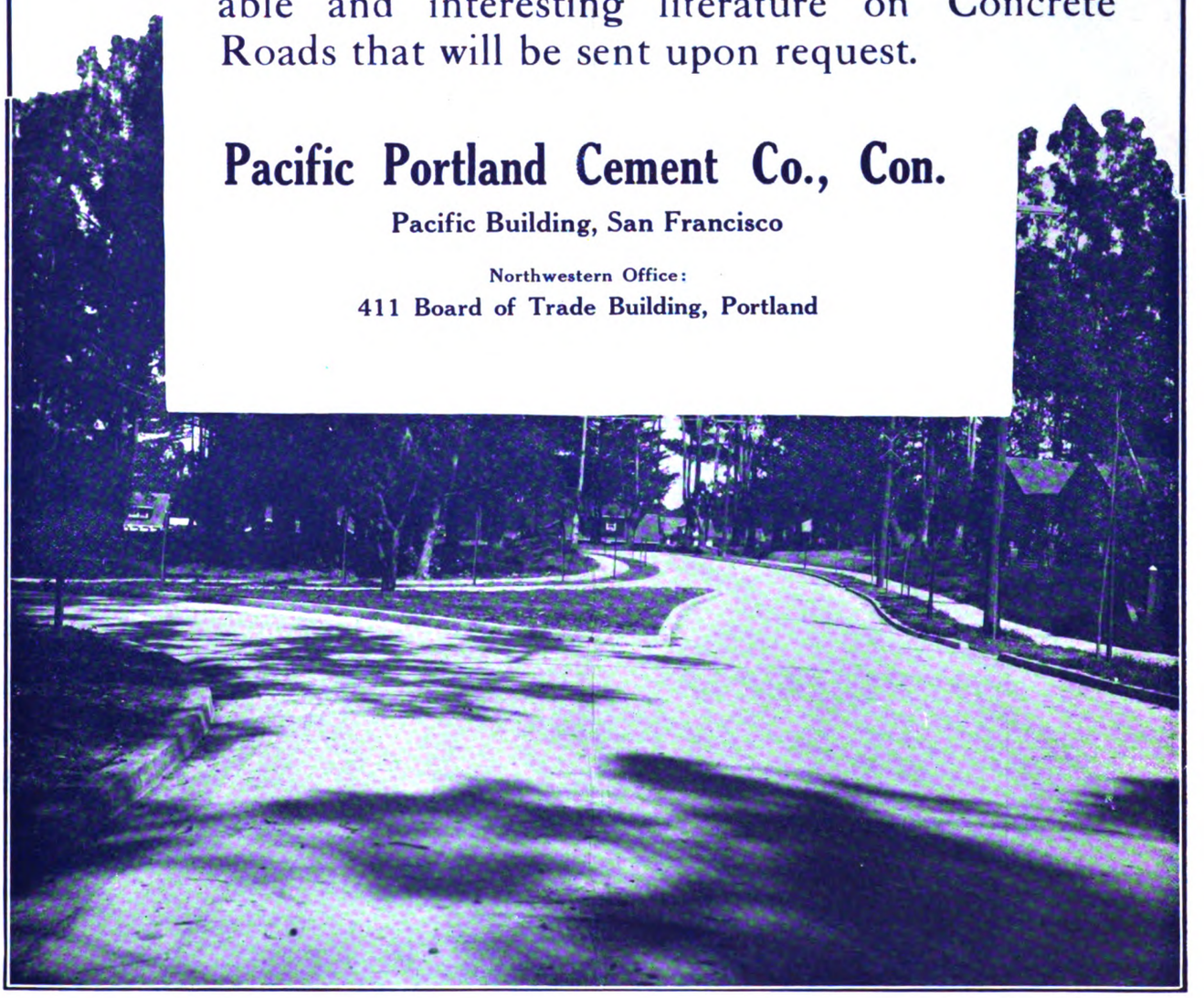
The so-called Hard Roads of yesterday are rapidly being replaced with Permanent Pavements. It would be interesting to know how many miles of oiled road in California alone has been torn up and paved with concrete.

It is significant that Golden Gate Cement has been, and is being, extensively used in building the truly wonderful network of Permanent Pavements now being constructed on the Pacific Coast. In fact, it is always used where quality is more important than a difference of a few cents per barrel in cost. We have some valuable and interesting literature on Concrete Roads that will be sent upon request.

Pacific Portland Cement Co., Con.

Pacific Building, San Francisco

Northwestern Office:
411 Board of Trade Building, Portland



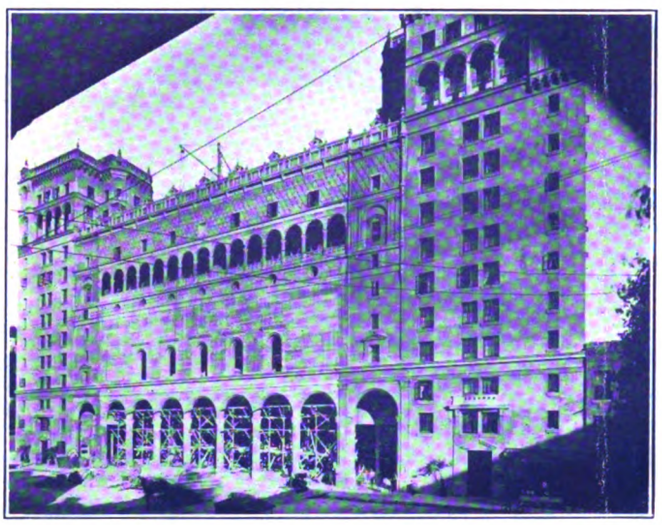
Generated on 2024-09-30 00:48 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

Henry Cowell Lime & Cement Company

No. 2 Market Street **San Francisco, California**



Bible Institute Building, Los Angeles

MT. DIABLO CEMENT USED EXCLUSIVELY

More than 25,000 barrels of Mt. Diablo Cement was used in the construction of this fine building, just completed for the Bible Institute on South Hope Street, Los Angeles.

Architects and Engineers can not afford to take chances with mediocre materials. They know that the question of quality is settled when Mt. Diablo Cement is to be used. Specify Mt. Diablo Cement and be sure.

Manufacturers of

Mt. Diablo Cement
Cowell Santa Cruz Lime

BRANCHES:

Oakland San Jose Sacramento Santa Cruz
Portland, Oregon Tacoma, Washington

Generated on 2024-09-30 00:47 GMT / https://hdl.handle.net/2027/uiug.30112007838169
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

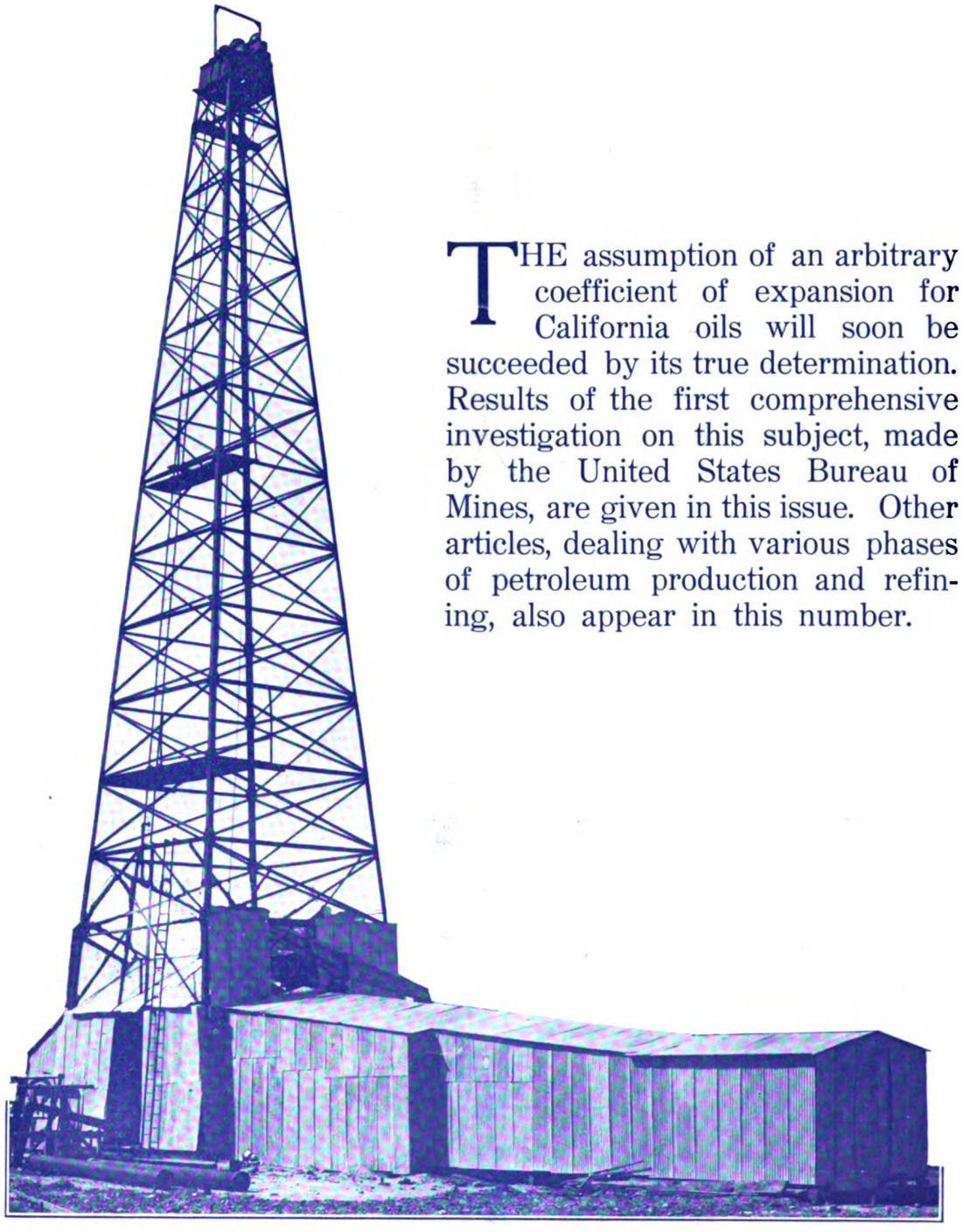
Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

Western Engineering

Volume 6, No. 6
$1.50 per year—25c. the copy

SAN FRANCISCO, DECEMBER, 1915

Buyers Directory, page 18
Advertisers Index, page 22

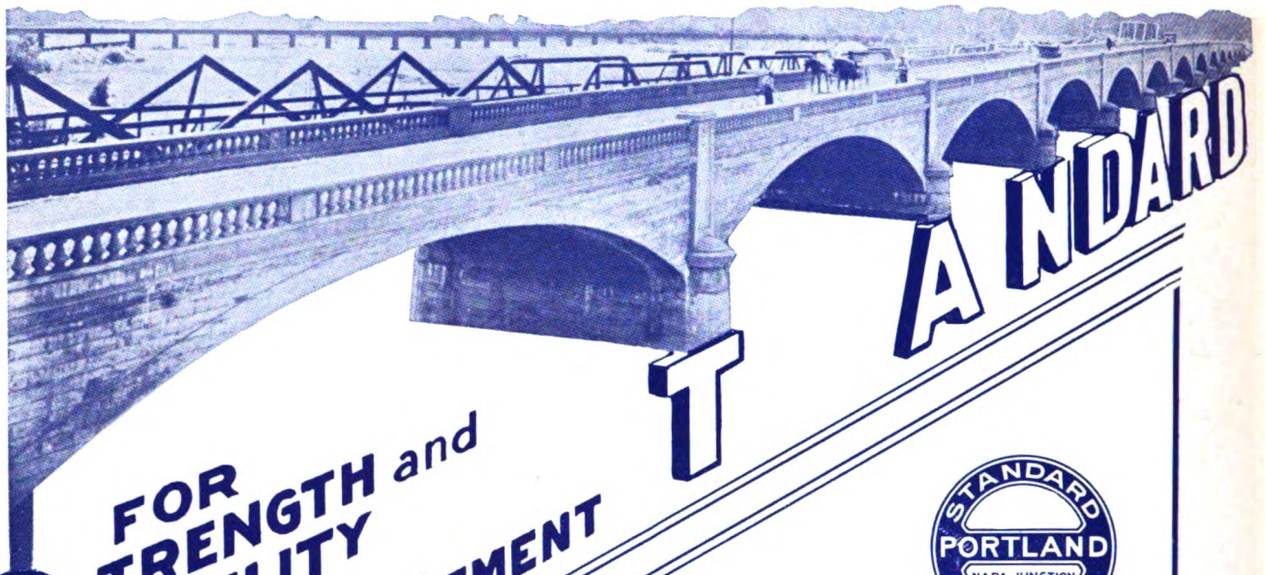


THE assumption of an arbitrary coefficient of expansion for California oils will soon be succeeded by its true determination. Results of the first comprehensive investigation on this subject, made by the United States Bureau of Mines, are given in this issue. Other articles, dealing with various phases of petroleum production and refining, also appear in this number.

Generated on 2024-09-30 00:55 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN



FOR STRENGTH and STABILITY SPECIFY STANDARD CEMENT

STANDARD PORTLAND CEMENT NAPA JUNCTION CAL

When you build a reinforced concrete structure, dont overlook the fact that much depends upon the

Portland Cement

A lesson goes with the above illustration. Properly designed bridges include strong foundations, and in order to obtain the strongest and most permanent foundation you must not only have it properly proportioned so as to support the great load it is to carry, but you must also build it with portland cement that produces maximum strength. Insist on "Standard" Portland Cement.

"Standard" Portland Cement has been used exclusively in many of our most important structures. Engineers and architects have specified "Standard" cement because they can always rely on its extremely uniform quality and maximum strength, both being essential qualities of a high grade cement. You can profit by the experience of others.

Specify "Standard" Portland Cement.

"Concrete for Permanence"

Standard Portland Cement Corporation

Office: Crocker Building, San Francisco

Works: Napa Junction, California

Generated on 2024-09-30 00:58 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

All Climates and Locations

Look Alike

to

Westinghouse Oil Well Motors

In the desert and in the snow, wet or dry, they are being used for drilling, for pumping, for cleaning, for pulling rods and tubing, and for roustabout service.

You can count on their reducing your operating costs.

You will never be troubled by gas or steam engine failure.

No steam plant to require firing up and retubing of boilers.

Wide range of pumping speeds. Higher speed for pulling rods and tubing.

A motor has only two wearing parts—two large well babbitted bearings.

Simpler to operate than any engine—no reversing clutch or lever—one sheave wheel does it all.

Built especially for oil well service.

Strong and rugged, will stand all kinds of hard use.

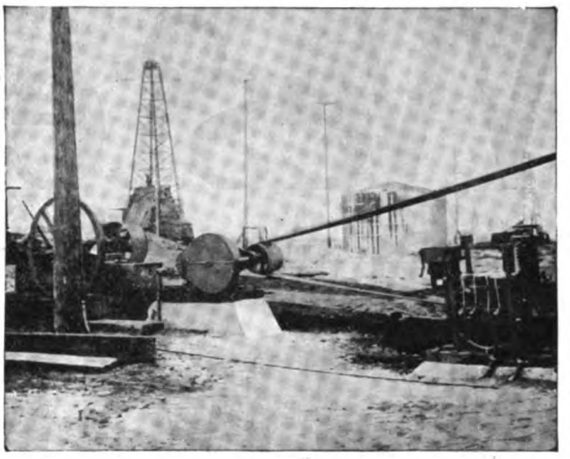
Let our representative tell you how others are saving money with our motors.

Send for further information—D. L. 3826.

Westinghouse Electric & Manufacturing Co.

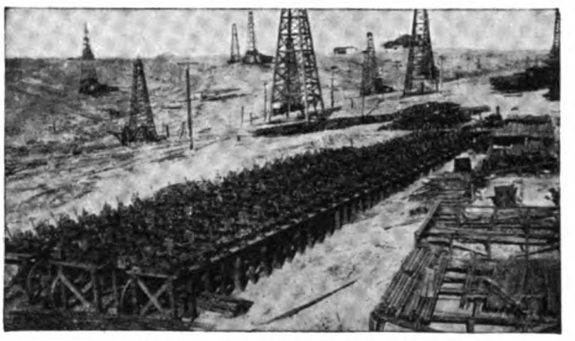
Sales Offices in all Large American Cities

East Pittsburgh, Pennsylvania

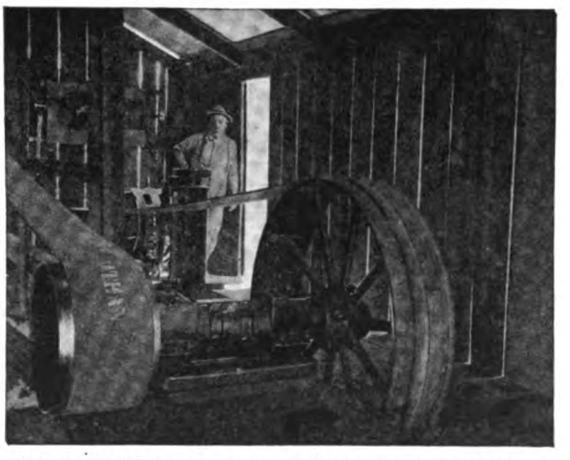


Westinghouse Motor pumping in the desert. Proper Band Wheel Speed secured by countershaft on the motor.

Westinghouse Motor pumping in the snow.



Scrap pile of over 100 steam engines replaced by Westinghouse Motors in the desert.



Westinghouse Motor pumping on the beam. Proper Band Wheel Speed secured by countershaft mounted on separate foundation.

Generated on 2024-09-30 00:56 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Western Engineering

SAN FRANCISCO, JANUARY, 1916

A New Front Cover

The above head-piece and the general arrangement of this page illustrate the new cover for WESTERN ENGINEERING which will appear on the January 1916 issue. This change is indicative of the rapid strides that are being made to make WESTERN ENGINEERING even more beneficial and attractive to its readers than it has been in the past.

The January Number

Both engineer and contractor will find much of interest in this issue. Look over the following partial list of articles:

UNIT SYSTEM OF REINFORCED CONCRETE FOR RAILWAY STRUCTURES

DESIGN OF REINFORCED CONCRETE BEAMS

MEASUREMENT METHODS FOR QUARRY OPEN CUT

REINFORCED CONCRETE TEE BEAMS

EFFECT OF LOW TEMPERATURES ON THE STRENGTH OF CONCRETE

USE OF MUD-LADEN FLUID IN OIL WELL DRILLING

FIRELESS LOCOMOTIVES

METHODS OF CONSTRUCTION OF A CONCRETE-LINED OIL-STORAGE RESERVOIR

Subscribe Now

$1.50 per year, in advance

A Weekly News Bulletin

Beginning with January 1, 1916, a WEEKLY NEWS BULLETIN will be issued by WESTERN ENGINEERING. This is the last word in service rendered to our subscribers. You want reliable construction news and you want it often and, as usual, WESTERN ENGINEERING will furnish this desired information. The news of the last week of each month will appear in regular WESTERN ENGINEERING and will not be published separately.

THE ITEMS PUBLISHED are not newspaper clippings but are authentic information sent in daily by our own correspondents in the field who are in close intimate touch with engineering and construction work in their respective localities. We now have 121 correspondents scattered over California, Oregon, Washington, Nevada, Idaho, Arizona, and Utah.

THE PRICE OF THIS ADDITIONAL SERVICE is $3 per year to regular subscribers only. Or you may have three months' trial of this weekly bulletin for $1.

Remember this is an exclusive service for regular subscribers to WESTERN ENGINEERING. The total price of $4.50 per year for both WESTERN ENGINEERING and the WEEKLY NEWS BULLETIN is negligible as compared with the benefits to be derived therefrom.

SEND FOR SAMPLE COPY

ADDRESS

Western Engineering

420 MARKET ST., SAN FRANCISCO

Generated on 2024-09-30 00:56 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

TANKS

FOR ALL PURPOSES

DESIGNED
FABRICATED
ERECTED

ANYWHERE ON THE PACIFIC COAST

Western Pipe & Steel Company of California

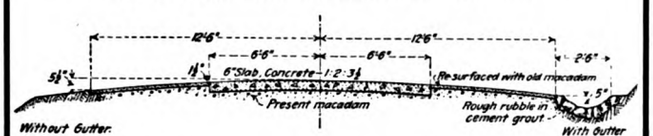
SAN FRANCISCO 444 Market St. TAFT STOCKTON 1036 J St. FRESNO SACRAMENTO LOS ANGELES 1758 N. Broadway

YOU NEED ROAD BUILDING DATA IN COMPACT, ACCESSIBLE FORM

The HARGER and BONNEY

Highway Engineers' Handbook

Gives such data for field and office use.



Gives cost data—specifications—tables of quantities and properties of materials and formulæ that every road man uses.

Authors have had practical training in New York State Department of Highways. They have had unusual facilities for collecting data. They have been assisted by leading road engineers and manufacturers.

SPECIAL FEATURES:

A great variety of special tables and general mathematical tables.
An unusually complete set of curve tables requiring no interpolation.
Tables of quantities of materials—cement, sand, stone, binder, filler, etc., for macadam, concrete, brick and other kinds of roads.
Full and complete cost data for estimating all classes of roadwork.
Specifications for all classes of work and material employed.
Full details of construction.
Tables of earthwork, macadam, concrete, reinforcement, oils, etc. These are time-savers to the office man.
The survey—details, suggestions, tables, examples, mapping, etc.

493 pages, 4 x 7. Flexible leather. $3.00 net, postpaid.

WESTERN ENGINEERING, San Francisco

OGDEN Route

To the EAST

SCENES FROM THE CAR WINDOW—

Forty miles of San Francisco Bay Shore.
Foothill orchards of the Sierras.
The goldfields region of '49.
Canyon of American River.
Blue Canyon.
Historic Donner Lake.
Truckee River region.
Nevada's mountain ranges and irrigated plains.
Great Salt Lake cut-off
Wasatch Mountains in Utah. Devil's Slide.
Echo and Webber Canyons.
Green River Valley and range country of Wyoming.
Overland trail of California pioneers.

FOUR THROUGH DAILY TRAINS SAN FRANCISCO TO CHICAGO

"Overland Limited"
Extra Fare $10
Lv. Ferry Station 4:00 P. M.

"Pacific Limited"
Lv. Ferry Station 10:20 A. M.

"San Francisco Limited"
Lv. Ferry Station 1:40 P. M.

"Atlantic Express"
Lv. Ferry Station 7:00 P. M.

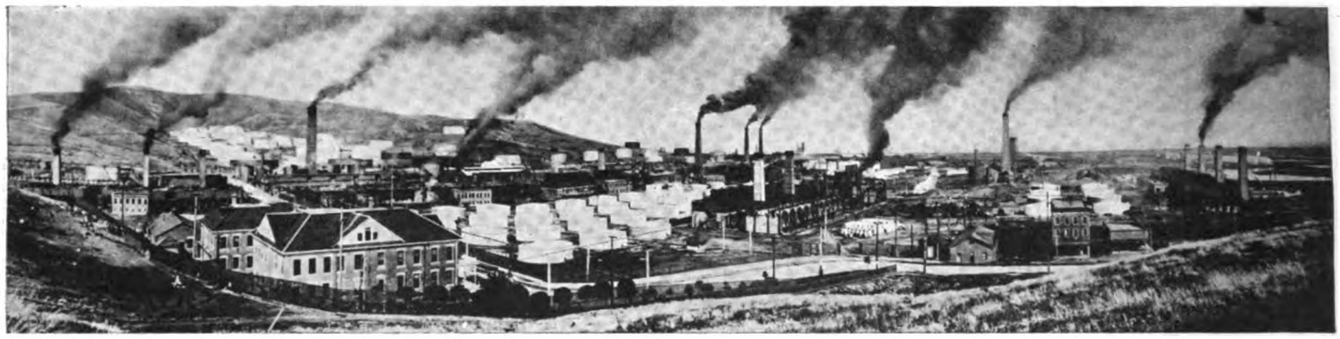
Best Dining Car in America

Automatic Electric Block Safety Signals.

FOR FARES AND BERTHS ASK AGENTS

Southern Pacific

Generated on 2024-09-30 01:04 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Calol Asphaltum

gives best possible results in the construction and maintenance of good roads and pavements.

Calol Asphaltum is a refinery product run to positive specified grades and standards to give uniformity. It has the proper ductility, consistency, and adhesiveness for road construction.

Highest Awards San Francisco and San Diego Expositions

D, E, F, and L Grades are shipped in barrels and especially equipped tank cars; B and C Grades in barrels only.

Write for particulars and prices.

Standard Oil Company

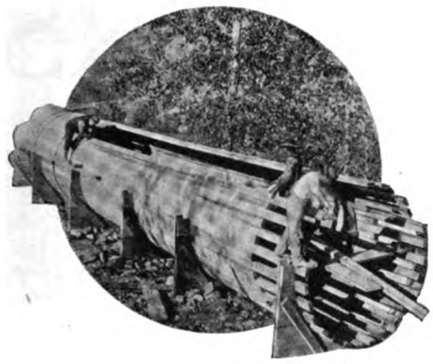
(CALIFORNIA)

Standard Oil Building **San Francisco, California**

Generated on 2024-09-30 00:58 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Continuous Wood Stave Pipe Will Fulfill Your Requirements

Our **Wooden Water Pipe** costs less initially than metal pipe and is more cheaply and quickly laid. This pipe is shipped from either of our factories, knocked down. On arrival on the ground, the staves and bands are distributed along the right of way. When ready to assemble the staves are put in place—then the bands. The lugs are then tightened and the job is done.

Lowest Upkeep

"Pacific" Wood Stave Pipe and Wood Tanks are permanent. The interior surface is round and smooth with low friction. The products will not corrode, chip nor crack. They are unaffected by acid or alkali and in consequence will last indefinitely.

PIPE AND TANKS FOR EVERY SERVICE

Pacific Tank & Pipe Co.

FACTORIES:
San Francisco
Los Angeles

OFFICES:
500 Fifth Street, San Francisco
401 Equitable Bank Bdg., Los Angeles

Symons Disc Crusher

Record of 48-in. crusher for a period of approximately 11 months—

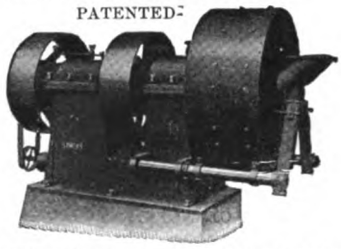
Operating labor	$0.00214 per ton crushed
Repair labor	.00205 per ton crushed
Material for repairs	.00280 per ton crushed
Power	.00899 per ton crushed
Total	$0.01598
Less extraordinary items	.00228
Cost under normal conditions	.01370

No. 1 Crusher ran 4,392 hours and crushed 197,640 tons of ore. One pair of discs ran 3,453 hours, crushing 155,385 tons at cost of $0.0014 per ton for discs.

No. 3 Crusher ran 4,462.5 hours, and crushed 200,812.5 tons ore. One pair discs ran 4,462.5 hours, crushing 200,812.5 tons at cost of $0.00109 per ton for discs.

Crushers handled 45 tons per hour, crushing 3 in. to ⅞ in. and requiring 35 horsepower each.

PATENTED



MANUFACTURED AND SOLD ONLY BY

CHALMERS & WILLIAMS

1456 Arnold St., Chicago Heights, Ill.

Agents for San Francisco and Los Angeles: N. B. Livermore & Co.
For Seattle and Portland: Northwestern Equipment Co.

Bitumastic Enamel

Inside of tank coated with Bitumastic Solution and Enamel, 17th-St. Car House, San Francisco, Cal.

Should be used on the interior of every water storage tank.

When Bitumastic is not used, engineers generally recommend painting every two or three years.

Bitumastic enamel will last **indefinitely.**

Bitumastic holds the world's record as an anti-corrosive and **keeps your maintenance cost where you want it—low.**

Let us supply you with data for pipe line, stand pipe and other important work.

Hill, Hubbell & Co.

Fife Building **San Francisco**

Generated on 2024-09-30 01:03 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

IROQUOIS ROLLERS

THE VERY BEST

TANDEM ROLLERS

The engine and all working parts of the IROQUOIS tandem rollers are of the strongest construction, thoroughly accessible and within the view of the operator.

Built in sizes from 2½ to 8 tons, all rollers being equipped with Massachusetts standard boilers; rolls lathe turned.

IROQUOIS WORKS:
The Barber Asphalt Paving Company, Buffalo, N. Y.

A complete set of tools and fittings for properly operating the roller is furnished with each machine.

PARROTT & CO.

Los Angeles Portland, Ore. SAN FRANCISCO Seattle Spokane Tacoma

EQUIPMENT INFORMATION BUREAU

This department is fully equipped with the latest catalogues of the leading machinery manufacturers and material dealers.

A capable mechanical engineer is in charge to advise when you are considering the installation of certain equipment or the purchase of sundry materials.

There is absolutely no charge for this service. Come in and look over any catalogues you want to see, or write for particulars about anything at any time.

WESTERN ENGINEERING SERVICE, 420 Market St., San Francisco

"A dollar saved is a dollar earned."

Let the

"Big-an-Litle" Mixers

earn and save for you

Why pay a high price for a lot of excess weight, gears, etc., when you can get a light, dependable mixer that will give you just as much output for a whole lot less money, and does it more economically, too?

Send for the "Mix a Minute" Catalogue.

Jaeger Machine Company, COLUMBUS, OHIO

Represented by

EDWARD R. BACON COMPANY

51 Minna St., San Francisco

A Mark of Distinction

We have adopted the design shown above as the trade-mark of *Western Engineering*. The large protractor typifies the many Engineers who read *Western Engineering* and the clam shell bucket typifies contracting and engineering construction, inasmuch as a large percentage of our readers are devoted to this kind of work.

REMEMBER THIS SYMBOL OF WESTERN ENGINEERING SERVICE

Western Engineering Publishing Co.
420 Market Street, San Francisco

Generated on 2024-09-30 01:01 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

PLATT

TRIPLEX PUMPS

Smith-Valle Triplex Pumps

Are arranged for belt drive or direct connection, and are designed for efficient and durable service. They embody features not found in any other pumps—precise adjustment, interchangeable parts. We make pumps for every service.

Let Our Engineers Advise You

THE PLATT IRON WORKS CO.

Home Office and Factory: DAYTON, OHIO

Branch Offices in all principal cities.

PUMPS FOR EVERY SERVICE

MAIL CHUTES

Highest Award for Satisfaction
GOLD MEDAL
Panama-Pacific International Exposition
HIGHEST AWARD FOR SERVICE

MAIL BOXES

Seven Reasons Why You Should Select
The American Mailing System:

1. Our novel method of concealing the points of attachment of our chute to the backing behind the mail chute.
2. The joint and point of attachment of the chute and neck piece concealed behind the chute.
3. The neatly machined stamped steel connection piece between the floors.
4. The machine stamped holding bar for the glass panel.
5. The neatly moulded and cast ceiling collar. Note the absence of screws and bolts.
6. The machined steel bar for concealing the joints between the two sections of chute.
7. The edge of the bar neatly finished against the glass panel.

There are forty more satisfactory reasons which you should read and understand before specifying mail boxes and **NON-CLOGGING MAIL CHUTES.**

AMERICAN MAILING DEVICE CORPORATION
REPRESENTED BY
PARROTT & CO.
SAN FRANCISCO
Los Angeles Portland Seattle Spokane Tacoma

Features That Count For Superiority in Mine Pumps

It is not only the highest development of the centrifugal principle of pumping that makes "American" centrifugals excel as mine pumps, but the development of special balanced types with grit-proof bearings which enables them to be installed in any location and operate successfully under the most difficult pumping conditions.

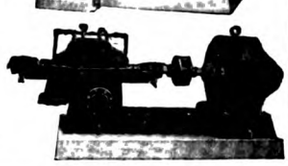
Several new types of sinker, inclined shaft and station pumps represent advanced practice in mine pump design you should know about.

Catalog 132 describes them.
Write for your copy.

THE AMERICAN WELL WORKS

General Office and Works
Aurora, Ill.

Chicago Office
First National Bank Building.



Western Sales Agents:

California Hydraulic Eng. & Supply Co., 74 Fremont St., San Francisco.
American Pump Co., Los Angeles.
Salt Lake Hardware Co., Salt Lake City.
M. J. O'Fallon Supply Co., Denver

Troy-Ajax
DUMP WAGONS

AWARDED

GRAND PRIZE
AT THE P. P. I. E.

Must be that the Troy-Ajax is just a little the "better" dump wagon, to be awarded such an honor. Once you've used a Troy-Ajax, you'll praise it even higher.

The Troy Wagon Works Company
Troy, Miami County, Ohio.
Represented by
EDWARD R. BACON COMPANY
San Francisco at 51 Minna Street

Generated on 2024-09-30 01:02 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Rock, Ore and Gravel Handling Machinery

TELSMITH Rock Crushers are superior to others in every respect.

Great Strength Compact Structure Reduced Weight Continuous Crushing Action

TELSMITH ROCK BREAKERS MOUNTED

These are low, stocky, portable outfits.

Drop a big boulder into the bowl—a boulder as big as the opening will take—CRUNCH—the head catches him and he's done for good.

That's crushing—if we do say it.

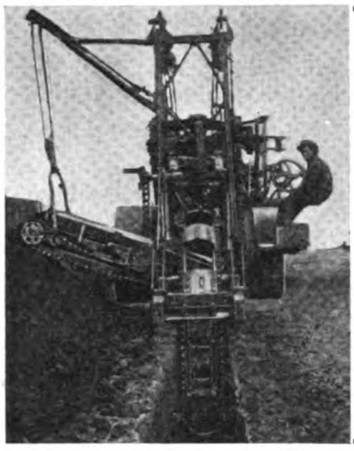
SMITH ENGINEERING WORKS

REPRESENTED BY

PARROTT & CO.

Los Angeles Portland, Ore. SAN FRANCISCO Seattle Spokane Tacoma

Smith Belt Elevators
Single Acting Friction Hoists
Portable Stone Bins
SMITH JAW CRUSHERS



A PERFECT DITCH

at from 35 to 50 per cent less than by hand

I specialize in ditching by machinery

Contracts taken for water, gas, oil, irrigation or drainage lines, saving you both time and money

WIRE OR WRITE

R. F. WARE

423 Balboa Bdg., San Francisco

1001 Marsh-Strand Bdg., Los Angeles

ROEBLING

WIRE ROPE

For Tramways, Cableways, Heavy Contracting Work, Derricks, Cranes, Mining, Haulage, Transmission, Construction Work, Etc.

Our 76 Years Experience is Your Guarantee

Specify **BLUE CENTRE** Rope

John A. Roebling's Sons Co. of Cal.

San Francisco Los Angeles Seattle Portland, Ore.

WIRE ROPE

THE BYRON JACKSON DEEP WELL TURBINE

is here illustrated in our latest design for belt drive.

We were the originators of this type of pump and are now offering our newest and most improved model for pumping water from great depths without the use of a pit. We have made installations of this pump to depths of 600 ft. below the ground, and will be more than pleased to figure on a pumping plant to meet your conditions. Our engineers are at your service gratis.

WHERE THE SERVICE IS HARDEST YOU FIND THE JACKSON

Byron Jackson Iron Works, Inc.

SAN FRANCISCO

WRITE FOR CATALOGUE NO. 30.

Generated on 2024-09-30 00:56 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

BUCYRUS
REVOLVING SHOVELS

Built with that strength and power that has made Bucyrus excavating machinery famous the world over.

Steam and electric shovels and dragline excavators of all types and sizes. River, harbor and placer dredges. Railway wrecking cranes, locomotive pile drivers and unloading plows.

BUCYRUS COMPANY
P. O. Box W, South Milwaukee, Wis.

San Francisco Portland New York Chicago New Orleans
B-96-1

EVERYONE KNOWS—

That the ROTARY DISTRIBUTOR is the fastest discharge for pavers

Why be continually misled? Look at these actual results:

26 men laid 22,163 square feet of 5-inch concrete base in one 9-hour day—A World's Record.

In 1914 L. S. Atkinson made the State Highway Record by averaging 750 lineal feet per day.

272 out of 365 miles of State Highway.

JUST THINK A MINUTE!
All of these Records were made with

CHICAGO PAVERS

PARROTT & CO.
SAN FRANCISCO LOS ANGELES

REDWOOD

WILL NOT MAKE GOOD

KINDLING

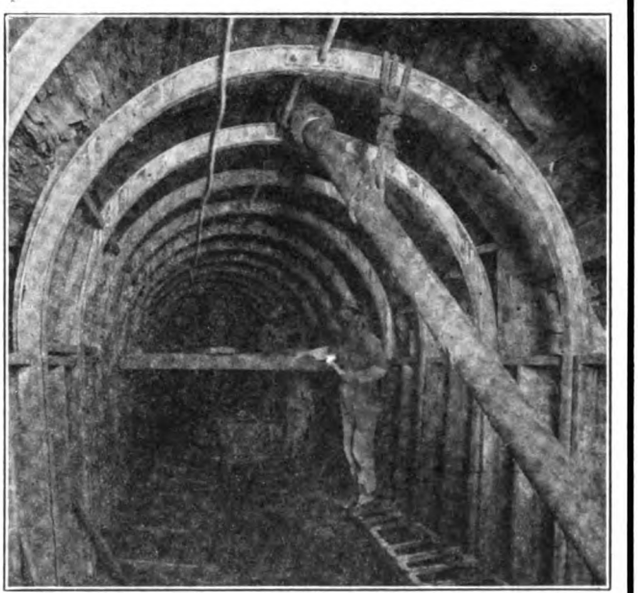
BECAUSE IT BURNS TOO SLOWLY

IT is, however, the logical material for tanks and pipe. It will last indefinitely, does not require painting or other protection, it is cheaper, it is not affected by great extremes in temperature or humidity, it is immune from insect attack and is uninjured by acid or alkaline solutions. There are redwood tanks in San Francisco that have been in daily use for 56 years. They are still in perfect condition.

Estimates and Plans Gladly Furnished

REDWOOD MANUFACTURERS CO.
1601 HOBART BDG., SAN FRANCISCO

Lining the pressure tunnels of the Los Angeles Aqueduct by Compressed Air



This view shows concrete delivery pipe entering top of forms which are built up as work progresses. About 75 lin. ft. of tunnel per day of 8 hours is lined in this way.

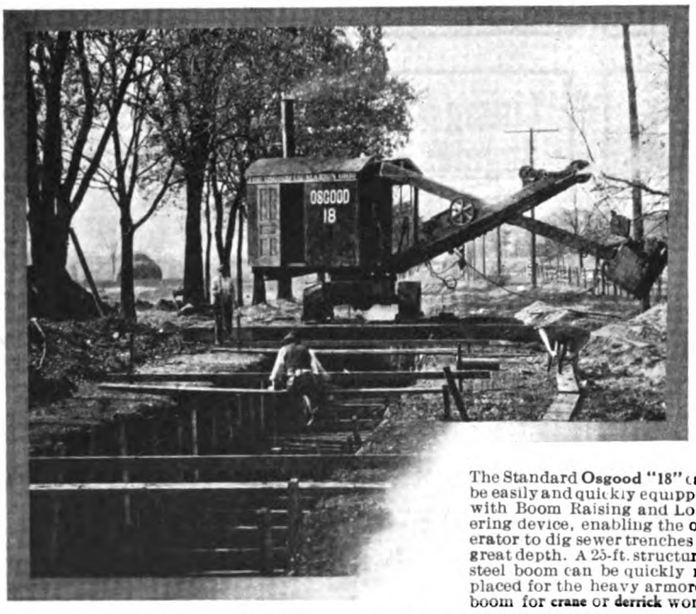
PACIFIC CONCRETE PLACING CO.
"The Pneumatic Method"
503 MARKET STREET, SAN FRANCISCO

Generated on 2024-09-30 00:56 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

LET THE OSGOOD

PROVE ITS EFFICIENCY ON YOUR JOB

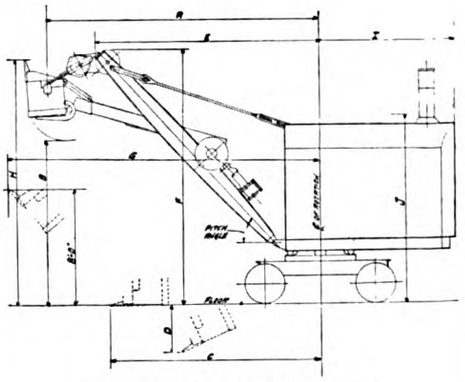
Osgood "18" Equipped with Clam Shell Attachment



The Standard **Osgood "18"** can be easily and quickly equipped with Boom Raising and Lowering device, enabling the operator to dig sewer trenches of great depth. A 25-ft. structural steel boom can be quickly replaced for the heavy armored boom for **crane** or **derrick** work.

WHAT OPERATORS SAY

All operators comment on arrangement of machinery, which provides abundant room in cab, so that they can get around shovel without interferences.



The steam steering mechanism and a lot of other speed and safety factors have made OSGOOD shovels popular with the contracting public.

STEAM SHOVELS, all sizes. DEEP WATER and DITCHING DREDGES

Western Representatives:

NORMAN B LIVERMORE & CO., 1306 Merchants National Bank Bldg., San Francisco, and 1206 Hibernian Bank Bldg., Los Angeles

NORTHWESTERN EQUIPMENT CO., 1205 Northwestern Bank Bldg., Portland, Oregon, and 1810 L. C Smith Bldg., Seattle, Wash.

AMES AGENCY, Dooley Block, Salt Lake City, Utah.

OSGOOD "18" ¾ YD.

	Boom pitched at 45 degrees	Boom pitched at 55 degrees
A—Dumping Radius	20' 0"	17' 6"
B—Height of Dump	10' 6"	13' 0"
C—Level Floor Radius	16' 6"	14' 6"
D—Below Level Floor	4' 0"	3' 0"
E - Radius of Boom	17' 0"	14' 0"
F - Height of Boom	16' 10"	19' 0"
G—Digg ng Radius at 8' Elevation	22' 6"	21' 3"
H—Height of Cut	16' 6"	19' 0"
I—Radius of Rear End	9' 3"	9' 3"
J—Height Boom Lowered	12' 8"	12' 8"

THE OSGOOD COMPANY, MARION, OHIO

Generated on 2024-09-30 00:56 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Western Engineering

CHARLES T. HUTCHINSON, Managing Editor
A. T. PARSONS, Assistant Editor
JOHN S. MARTIN, Advertising Manager

420 Market Street, San Francisco

PUBLISHED MONTHLY BY THE
WESTERN ENGINEERING PUBLISHING COMPANY

Entered as second-class matter, June 1, 1912, at the post-office at San Francisco, California, under Act of March 3, 1879

Telephone Sutter 5777. Cable address: Pertusola.
Code: Bedford McNeill (2 editions).

ANNUAL SUBSCRIPTION:
United States and Possessions, and Mexico.....$1.50
Other Countries in Postal Union.....$2.50

VOL. 6 SAN FRANCISCO, DECEMBER, 1915 NO. 6

TABLE OF CONTENTS

EDITORIAL: *Page* 225 REVIEW OF THE MONTH: *Page* 227

ARTICLES

THE COEFFICIENT OF EXPANSION OF CALIFORNIA CRUDE OILS AND DISTILLATES. By *A. S. Crossfield.* *Page* 229

Summary of the results of an investigation carried on by the United States Bureau of Mines. Several hundred samples were taken from wells in all parts of the State, and composite samples were made from these, representative of each field. These were tested over a large range of temperature. Representative distillates were also tested. Charts and formulae are given for the accurate computation of the volume of any oil at a standard temperature. **Western Engineering,** December 1915. Illustrated.

STANDARDIZING ROCK-CRUSHING TESTS. By *M. K. Rodgers.* *Page* 239

Abstract of a paper stating details that should be given in reports of rock-crushing tests. **Western Engineering,** December 1915.

THE DEVELOPMENT OF THE STEEL DRILLING-RIG. By *R. B. Woodworth.* *Page* 240

History of the steel drilling-rig for oil and water-wells, from the first steel derrick constructed in 1892, to the all-steel rigs in use at the present time. A description is also given of the steel drilling-rig on exhibition at the Panama-Pacific Exposition, which represents the best practice. **Western Engineering,** December 1915.

FACTORS AFFECTING FIRE HAZARD OF OIL PRODUCING AND REFINING PROPERTIES. By *A. W. Gunnison.* *Page* 245

Gives a list of precautions to be taken on an oil-property to reduce the danger from fire and incidentally the insurance-rate. **Western Engineering,** December 1915.

EUROPEAN REFINING METHODS. By *Leopold Seelenfried.* *Page* 247

This article considers practice in Austro-Hungary and Rumania only. The methods of refining are discussed, with particular regard to points wherein they differ from those in use in American refineries. **Western Engineering,** December 1915. Illustrated.

A RATIONAL BASIS FOR MOTOR GASOLINE SPECIFICATIONS. By *Paul W. Prutzman.* *Page* 249

Abstract of paper presented before the American Petroleum Society, giving the author's summary of conditions to be satisfied. **Western Engineering,** December 1915.

WOOD-BLOCK PAVING IN GREAT BRITAIN. *Page* 250

Summary of practice regarding materials and methods of laying and maintenance. **Western Engineering,** December 1915.

THE USE OF HYDRATED LIME IN CONCRETE FOR WATERPROOFING. By *L. N. Whitcraft.* *Page* 251

Gives data concerning experimental and practical use of hydrated lime for this purpose, with conclusions regarding the proper proportion of lime to be used for different conditions. **Western Engineering,** December 1915.

DISCREPANCIES BETWEEN MAP AND TEXT IN A GEOLOGICAL SURVEY REPORT. By *Leon J. Pepperberg.* *Page* 252

Discussion of a recent report on district near Palo Pinto, Texas, in which the text describes anticlinal structure where the map shows synclinal structure, and vice versa. **Western Engineering,** December 1915. Illustrated.

THE ORIGIN OF PETROLEUM AND ASPHALT. By *Clifford Richardson.* *Page* 254

Statement of a theory of the origin of petroleum through the action of colloidal clays upon natural gas. **Western Engineering,** December 1915.

METHODS AND COSTS OF CONSTRUCTION OF CONCRETE HIGHWAY AT SARNIA, ONTARIO. *Page* 255

The construction of one mile of concrete road in Canada is described. **Western Engineering,** December 1915.

NOTES ON THE SANTA MARIA OILFIELDS. By *Paul W. Prutzman.* *Page* 256

Discusses general conditions in this California oilfield at the present time. **Western Engineering,** December 1915.

METHOD OF PREVENTION OF SAND-INFILTRATION IN WELLS SUPPLYING THE PANAMA-PACIFIC EXPOSITION. *Page* 258

The use of selected sand between two casings to prevent infiltration of sand from the water-bearing strata is described. **Western Engineering,** December 1915.

DEPARTMENTS

ENGINEERS' NOTE BOOK: *Page* 259
Conveyor-belt Calculating Chart. By J. D. Mooney and D. L. Darnell.

HINTS ON PRACTICE: *Page* 259
The Holding Power of Nails.

BOOK REVIEWS: *Page* 260

INDUSTRIAL PROGRESS: *Page* 261

CONSTRUCTION NEWS SUMMARY: *Page* 262

ENGINEERING SOCIETIES: *Page* 268

COMING CONVENTIONS: *Page* 268

PERSONAL: *Page* 268

CATALOGUES RECEIVED: *Page* 268

Generated on 2024-09-30 00:55 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

RIVERSIDE PORTLAND CEMENT

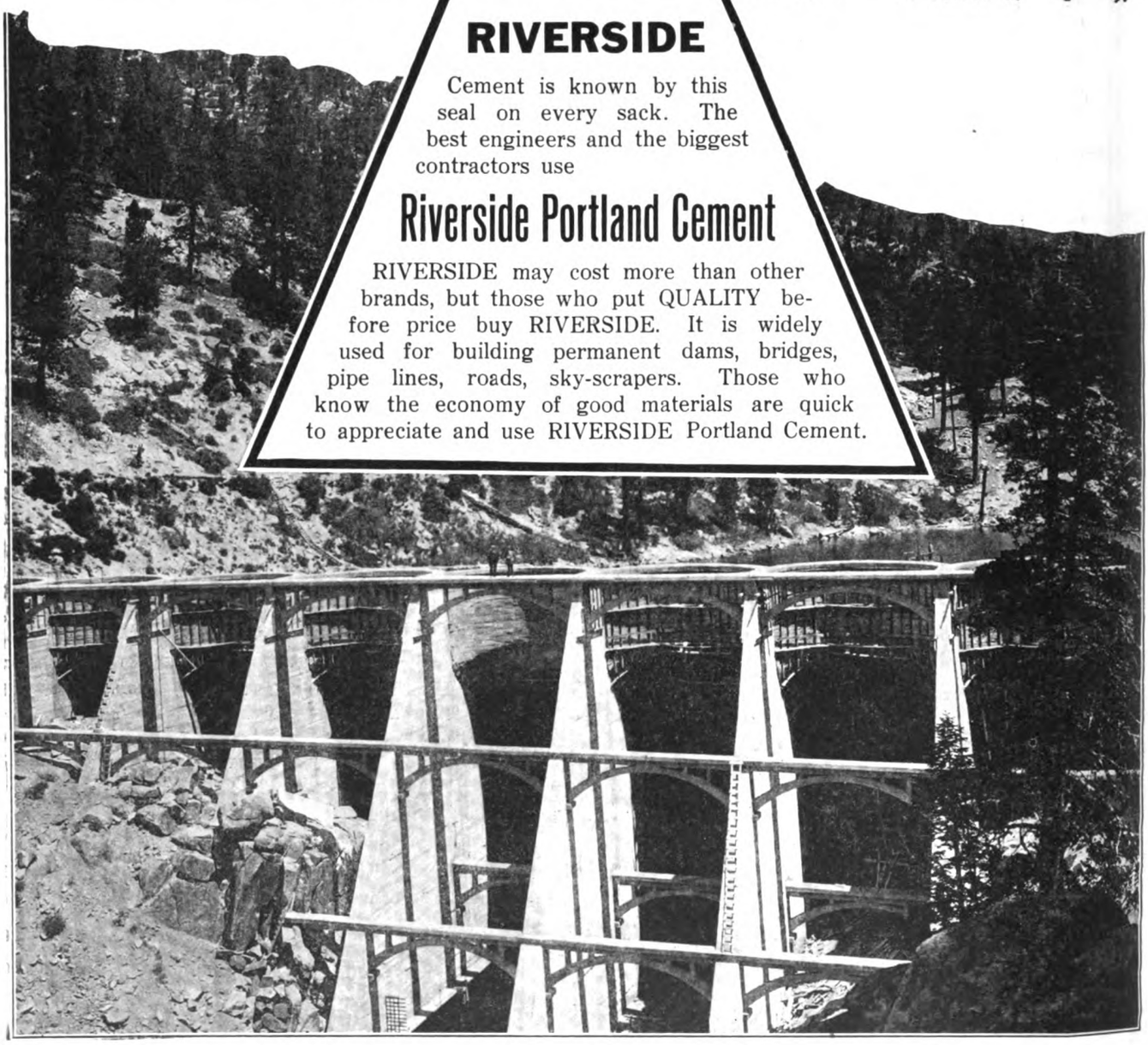
RIVERSIDE PORTLAND CEMENT CO. RIVERSIDE CAL.

RIVERSIDE

Cement is known by this seal on every sack. The best engineers and the biggest contractors use

Riverside Portland Cement

RIVERSIDE may cost more than other brands, but those who put QUALITY before price buy RIVERSIDE. It is widely used for building permanent dams, bridges, pipe lines, roads, sky-scrapers. Those who know the economy of good materials are quick to appreciate and use RIVERSIDE Portland Cement.



Generated on 2024-09-30 01:05 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

Professional Directory

AMERICAN ENGINEERING CORPORATION
C. E. Grunsky, Pres.
All Branches of Engineering
Mechanics Institute Bdg., San Francisco.

ARNOLD, Ralph, Cable: Ralfarnoil.
Geologist and Petroleum Engineer
Union Oil Bdg., Los Angeles, Cal.
115 Broadway, New York.
No. 1, London Wall Bdgs., London, E. C.

AUSTIN, H. D.,
Electrical and Mechanical Engineer
Investigations, Reports, Plans and Specifications.
Vallejo, Cal.

BERRY, S. L.,
Hydraulic and Mechanical Engineer
329 Rialto Bdg., Phone Sutter 3432,
San Francisco, Cal.

BRADLEY, Fred W.,
Mining Engineer
Crocker Bdg., San Francisco.
Cable: Basalt. Code: Bedford McNeill.

BYLLESBY, H. M. & CO
Engineers
Electric Light, Gas, Street Railway and Water Power Properties. New York:
Chicago: Insurance Ex Bdg. Trinity Bdg.

CHODZKO, A. E.,
Consulting Mechanical Engineer
Specialty: Compressed Air.
647 Phelan Bdg., San Francisco.

DAY & PHELAN,
Civil and Landscape Engineers
14-15 First National Bank Building,
Santa Barbara, Cal.

DEWELL, H. D., Assoc. M. Am. Soc. C.E.
Civil Engineer
Chief Structural Engineer Pan.-Pac. Exposition.
Structures—Hydraulics—Irrigation.
58 Sutter St., San Francisco

DICKIE, G. W.,
Consulting Eng. and Naval Architect
Past Manager Am. Soc. M. E., Mem. of Council Soc. Naval Architects and Marine Engineers.
24 California St., San Francisco.

EASTWOOD, John S., C.E.,
Consulting Engineer
EASTWOOD MULTIPLE ARCH DAMS.
Hearst Bdg., San Francisco, Cal.

ENGLISH, R. T.,
Consulting Civil Engineer
Care Chico Construction Co.
Chico, Cal.

FALKENBURG & LAUCKS,
Consulting, Analytical, Inspecting
Chemists, Metallurgists, Engineers.
Seattle, Wash.

FOX, Chas. Kirby,
Civil Engineer
Irrigation, Investigation, Construction and Valuation.
Pomona, Cal. Code: Bedford McNeill.

FOWLER, Chas. Evan,
M. Am. Soc. C. E., M. Can. Soc, C. E.
Consulting Civil Engineer
Bridges, Structures, Foundations.
River and Harbor Improvement.
504 Central Bdg., Seattle, U. S. A.

HAAS, Herbert,
Consulting Engineer
Diesel Engine Power.
524 Merchants Exchange Bdg., San Francisco.

HAGER, Dorsey,
Geological Engineer
Expert on Oil Production.
Hotel Tulsa Bdg., Tulsa, Oklahoma.

HUBER, Frederick W.,
Consulting Chemical Engineer
Structural Materials and Industrial Research.
Title Insurance Bdg., Los Angeles, Cal.

KITTS, J. A.,
Assoc. M. Am. Soc. C. E., M. Am. Soc. Test. Mats.
Consulting Concrete Engineer
Civil Engineer
2425 Le Conte Ave., Berkeley, Cal.

JOHNSON & HUNTLEY,
Geologists
Oil and Gas Problems.
306 State Hall, Univer-ity of Pittsburgh, Pittsburgh, Pa.

JONES, E. L., Electrician,
Consulting Engineer—Electrical and Mechanical
Formerly with U. S. Government.
53 N. Second St., San Jose, Cal.

LEE, Charles H., Asso. M. Am. Soc. C. E.
Hydraulic Engineer
Specialty—Underground water problems.
1102 Central Bdg., Los Angeles.

LE GRAND, J. Mastella,
Hydraulic and Structural Engineer.
Irrigation, Mills and Power Plants, Plans, Specifications, Estimates and Reports.
1102 Central Bdg, Los Angeles, Cal.

LEONARD & DAY,
Consulting Engineers
Bridges, Buildings and Foundations.
528-30 Rialto Bdg., San Francisco.

LINDEN, H. E.,
Hydro-Electric Engineer
Specialty: Water Power and Irrigation.
Bishop, Inyo County, Cal.

W. M. Ledbetter, President — J. H. Zeitler, Secretary — J. C. Wright, Engineer
MERCEREAU BRIDGE & CONSTRUCTION CO.
Engineers and Contractors
Bridges, Wharfs and Heavy Concrete Construction.
471 Pacific Electric Bdg., Los Angeles.

LIPPINCOTT, J. B.,
Consulting Engineer
Specialty: Water Supply Problems.
Central Bdg., Los Angeles.

MAYBERRY & PARKER,
Architectural Engineers
Structural Steel. Reinforced Concrete.
472 Pacific Electric Bdg., Los Angeles.

MILLER, H. C.,
Engineering and Construction
Civil, Mining, Drainage, Water Development, Reinforced Concrete.
Bishop, Inyo County, California

MORRIN, Thomas,
Mem. A. S. M. E., Mem. A. S. H. & V. E.
Consulting Mechanical Engineer
Power Plants, Water Works, Heating, Ventilation
Phelan Bdg., San Francisco Kearny 3646

PACIFIC CHEMICAL LABORATORIES — L. Seelenfried, B. Lowy
Analytical Chemists—Petroleum Specialists
Thayer Bdg., Oakland. Rm. 618, 24 Calif. St., S. F.

PECK, Myron H.,
Civil Engineer
Care Standard American Dredging Co.,
Vallejo, Cal.

SANDERSON & PORTER,
Engineers and Contractors
Reports, Designs, Construction, Management, Hydroelectric, Railway Light and Power Properties, Oil Pipe Lines. New York, San Francisco.

STILL, Alfred,
Consulting Electrical Engineer.
Fellow Am. I. E. E.
Purdue University, La Fayette, Indiana.

STOVALL, S. L.,
Consulting Electrical and Hydraulic Engineer
Stovall Concrete Slab Conduit.
417 Foxcroft Bdg., San Francisco, Cal.

STROUD, B. K.,
Petroleum Engineer
First National Bank Bdg., Oakland, Cal.

TRASK, F. E.,
Consulting Civil & Hydraulic Engineer
Specialty: Water Works, Power Plants, Reports.
Union Oil Bdg., Los Angeles, Cal.

WHITHAM, Paul,
Consulting Civil Engineer
Railway, Port, Terminal and City Planning Work.
Seattle, U. S. A.

WOLD, Eric,
Consulting Engineer
Roads, Pavements, Municipal Improvements.
727 Hearst Bdg., San Francisco.

WOOD, Chester Earl,
Consulting Engineer
Mining, Natural Gas and Hydraulics.
515 E. 14th St., Oakland, Cal.

Generated on 2024-09-30 00:57 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Second-Hand Equipment

The cost of inserting announcements of machinery or supplies, for sale or wanted, is 5 cents per word, minimum order 50 cents. Remittance MUST accompany order.

FOR SALE AND RENT—First-class used contractors' equipment of all kinds. Contractors Machinery Exchange, 48 Stanford street, off Brannan near Second, San Francisco.

SHOP MACHINERY-LATHES, 16-in. Hendy shaper, small milling machines, drill presses, surface and other grinders, forge and tools, vises, benches, shafting, pulleys, drills, taps, and reamers. All for sale cheap. Address Box 75, Western Engineering.

WANTED—10-hp. alternating current 3-phase electric motor; no dealers need apply. Address Box 76, Western Engineering.

HAVE 250,000 second-hand brick for sale cheap. Address Box 77, Western Engineering.

WE OFFER 1—30x36 No. 200 Buffalo Forge, new, for $37.50, and 1—24x24 Climax Buffalo Forge, new, for $30. Address Box 63, Western Engineering.

FOR SALE CHEAP—One 16-in. Barker & Chard shaper as good as new. Price $300. Address Box 64, Western Engineering.

BARGAIN—One 30 horse-power single drum electric D. C. hoist. Priced at $500 for quick sale. Address Box 65, Western Engineering.

DO YOU WANT A HOIST? We will sell our new 15 horse-power Fairbanks-Morse gas engine hoist for $750. Address Box 66, Western Engineering.

GAS ENGINE, marine type, 5 horse-power, with complete equipment, nearly new. Cost $150; price $49. Address Box 71, Western Engineering.

A 12-h.p. Otto heavy duty stationary gas engine in perfect order; one 100-h.p. heavy duty stationary engine for distillate or Coalinga oil; all complete and ready to run. Make offer. Address Box 72, Western Engineering.

ONE 10-h.p. motor, D. C.; one 7½-h.p. motor, D. C., in fine condition; for sale, cheap. Address Box 73, Western Engineering.

CONTRACTORS OUTFIT—1 Ransome concrete mixer, 1 power saw complete, saws, belts, concrete carts, iron wheelbarrows, iron scoop-barrows, 2 jacks, 1 hoist, motors, cable, etc., must be sold for any reasonable offer. Address Box 74, Western Engineering.

AIR COMPRESSORS for sale cheap; 6x6 Curtis D. C. air compressor, $150. Address Box 67, Western Engineering.

AUSTIN CRUSHER—No. 2 gyratory type. Price $400. Address Box 67, Western Engineering.

FOR SALE—2-h.p. gas engine, $75. This engine is just like new. Address Box 68, Western Engineering.

HOW ABOUT this Fairbanks-Morse gas engine, 4 horse-power, $150. Write now. Box 69, Western Engineering.

DRILL PRESS—26-in. Prentice drill press, good as new, for $200. Address Box 70, Western Engineering.

YOU CAN GET A CEMENT-GUN at a price that is within your reach. I have eight standard cement-guns that have been put in excellent condition. Write for prices. Box 53, Western Engineering.

FOR SALE—Portable compressor for either gas engine or motor drive. Capacity 150 cubic feet at 100 lb. pressure. Cost $900 new. Make offer. Box 52, Western Engineering.

WILL SELL my 105-foot portable gas engine driven compressor for $400. Terms, $50 down, $25 per month, or $350 cash. Box 51, Western Engineering.

FOR SALE—Planimeter; polar type. Cost $45. Good as new. Make offer. Box 54, Western Engineering.

I HAVE $35 WORTHINGTON PUMP, 2x2x3. Will sell for $15. Box 55, Western Engineering.

WANTED TO BUY SECOND-HAND—1 modern, medium sized electric hoist; 1 late type, 2-stage air compressor, 500 to 800 cubic feet capacity; 1 sinking pump, about 60 gal. per minute; transformers. To be in first-class condition; state details and price. Address Box 58, Western Engineering.

WE CAN MAKE YOU some very attractive prices on several types of pumps that we have at various locations on the Pacific Coast. Address Box 56, Western Engineering.

WANTED—Reliable men to act as subscription agents for Western Engineering. You can make money in your spare time. Send references. Address Circulation Department, Western Engineering.

STRUCTURAL ENGINEER wants position with municipality or well established contracting or engineering firm. Has had 10 years actual experience. Can furnish the very best references. Address Box 62, Western Engineering.

BLACKSMITH desires position; is also horseshoer, wagon-maker, and all-round mechanic; will go anywhere. Address Box 57, Western Engineering.

WE WANT MEN who are really in touch with what is going on in the engineering world to serve as our special news correspondents. Address Western Engineering Service.

"We Strongly Recommend It"

"Though the number of books on Oil is growing somewhat large, we shall place this in the first half-dozen and we strongly recommend it."

—The Petroleum World (London).

Up-to-Date Practice

The latest approved improved methods used in Oil Production. A book written by experienced Oil Technologists who have observed and applied these methods profitably.

OIL PRODUCTION METHODS

by Paul M. Paine and B. K. Stroud,

with a chapter on

ACCOUNTING SYSTEMS by W. F. and W. B. Sampson

240 pages. Fully illustrated. 6x9 in. Cloth, $3.00 postpaid.

WESTERN ENGINEERING, 420 Market Street,

SAN FRANCISCO

CONTENTS

The Distribution, Properties and Uses of Petroleum.

Geology—
Classes of Sedimentary Rocks, Origin of Oil, Relation of Rock Structure to the Occurrence of Petroleum, Surface Indications of Oil, Location and Spacing of Wells, Logs.

Rigs and Equipment—
Standard Drilling Rig, Lumber Lists for Derricks, Rig Iron Lists, Engines and Boilers, Cordage, Wire Rope, Casing.

Drilling Methods—
Standard Method, Rotary Method, Circulating System, Combined Rotary and Standard Drilling.

The Exclusion of Water from Oil-Sands—
Importance of Exclusion of Water, Exclusion of Water by Landing String of Casing, Cementing Water Off by Bailer Methods, Cementing Water Off by Pumping Methods, Exclusion of Water Below the Oil-Sand.

Production—
Flowing Wells, Intermittent Flowing Wells, Artificial Flowing of Oil Wells, Pumping, Multiple Pumping, Compressed Air Pumping, Perforations, Shooting Wells, Dehydrating Oil, Handling Oil, Gas Traps.

Fishing Tools and Methods—
Fishing for Lost Tools, Fishing for Casing, Accidents to Producing Wells, Rotary Fishing Tools.

Accounting Systems—
Development, Production, Pay Roll System, Purchasing and Stores System, Machine Shop, Reports, Financial Statements.

Generated on 2024-09-30 01:00 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

CENTRAL COAL & COKE CO.'S
Peacock Rock Springs Coal, Wyoming
UTAH GAS & COKE CO.'S
Salt Lake Gas Coke (Furnace), Utah
UNION FUEL CO.'S
American Cannel (Domestic), Utah
YOLANDE COAL & COKE CO.'S
Foundry & Smelting Coke, Alabama
Prepared Blacksmith Coal, Alabama

Minimum Shipments: Coal 30 tons, Coke 15 tons

PEACOCK COAL ROCK SPRINGS

Charles R. Allen
EXCLUSIVE DISTRIBUTOR
119 Chronicle Bldg., San Francisco

BROWNING LOCOMOTIVE CRANES

Buckets
Magnets
Grapples
Ditchers
Wreckers
Pile Drivers
Shovels

Sales Offices:
New York Philadelphia
Chicago San Francisco

THE BROWNING CO.
Cleveland, O.

J. H. HOPPS JOHN DANIEL

Daniel Contracting Co.
ENGINEERS AND CONTRACTORS
503 Market Street, San Francisco
Telephone Kearny 1803

"Grant Concrete Mix"

The only properly proportioned mix in this market. Composed of hard, clean, fresh-water gravel, free from sandstone, and contains about 25% of crushed rock and necessary amount of sand.

We Guarantee Less Than 25% Voids

Used on many important first-class buildings and road work. Accepted on all City, State and U. S. Government work.

Grant Gravel Company
Flatiron Bldg. Phone Sutter 1582
SAN FRANCISCO

Contra Costa Construction Co.
Contracting Engineers
2323 Shattuck Avenue, Berkeley
Telephone, Berkeley 1176
330 Tenth Street, San Francisco
Telephone, Market 6502

GRAVEL and ROCK

We have the largest and only fully equipped plants in Central California and are prepared to furnish the best grade of Gravel, properly washed, screened, crushed, and graded, in any desired sizes. Also Sand and Roofing Gravel. We can also supply the best quality of Crushed Rock in all sizes.

GRANT ROCK & GRAVEL CO.
327-328 CORY BLDG., FRESNO, CAL.

GRAVEL PLANT
Friant, (near Fresno)

ROCK PLANT
Roche (near Exeter)

WE CAN SAVE YOU MONEY
in your
Ditch Lining
with the
Cement Gun

Get our figures on water proofing and tunnel lining.

Send in Your Problems. We are at Your Service.
H. A. CHALMERS, Inc.
742 New Call Bldg. San Francisco

Engineers' Pocket Book of Reinforced Concrete
By E. LEE HEIDENREICH
Flexible Leather. 374 Pages. Illustrated. $3.00 Postpaid.

The contents are as follows:

(1) Materials and Machines used in Concrete Construction.
(2) Design and Construction of Buildings.
(3) Design and Construction of Bridges.
(4) Abutments and Retaining Walls.
(5) Culverts, Conduits, Sewers, Pipes and Dams.
(6) Tanks, Reservoirs, Bins and Grain Elevators.
(7) Chimneys. Miscellaneous Data.

There are 80 tables in this "Pocketbook" which are of inestimable value as savers of time, also formulas for designing the various kinds of reinforced concrete structures, which are deduced, discussed and illustrated by examples, thus making this an exceptionally useful "Pocketbook" for the designing engineer.

For Sale by
MINING and Scientific PRESS
420 Market Street, San Francisco

Generated on 2024-09-30 00:59 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Where to Buy It on the Pacific Coast

ASPHALT Page.
Fairchild-Gilmore-Wilton Co. 19
Standard Oil Co. 6

ASPHALT PLANTS
Austin-Western Road Machy Co. ..... —
Bacon & Co., Edward R. 8, 9
Harron, Rickard & McCone ..... —
Parrott & Co. 8, 9, 10, 11
Young Machy. Co., A. L. 22

BELTING
N. Y. Belting & Packing Co. ..... —

BITUMASTIC ENAMEL
Hill, Hubbell & Co. 17

BOILERS
Allis-Chalmers Mfg. Co. 21
Chalmers & Williams 7
Hendy Iron Works, Joshua ..... —
Moore & Co., Chas. C., Engineers 20

CARRIERS
Browning Co., The 17

CEMENT GUNS
Chalmers, Inc., H. A. 17

CEMENT, PORTLAND
Cowell Lime & Cement Co., Henry ..... Back Cover
Pacific Portland Cement Co., Con. 23
Riverside Portland C.ement Co. 14
Santa Cruz Portland Cement Co. ..... —
Standard Portland Cement Corporation 2

COAL
Allen, Chas. R. 17

COMPRESSORS, AIR
Allis-Chalmers Mfg. Co. 21
Chalmers & Williams 7
Harron, Rickard & McCone ..... —
Hendy Iron Works, Joshua ..... —
Moore & Co., Chas. C., Engineers 20
Platt Iron Works Co. 9

CONCRETE MIXERS
Austin-Western Road Machy Co. ..... —
Bacon & Co., Edward R. 8, 9
Foote Mfg. Co. ..... —
Harron, Rickard & McCone ..... —
Jaeger Machine Co. 8
Koehring Machine Co. ..... —
Parrott & Co. 8, 9, 10, 11
Rapid Heated Mixer Co. ..... —
Smith Co., T. L. 11
Waterloo Cement Machy. Corp'n ..... —
Young Machy. Co., A. L. 22

CONTRACTORS, GENERAL
Barber Asphalt Paving Co. 8
California Road & Street Improvement Co. 19
Chalmers, Inc., H. A. 17
Contra Costa Construction Co. 17
Daniel Contracting Co. 17
Eastwood Construction Co. 21
Fairchild-Gilmore-Wilton Co. 19
Moffett & Mead 19
Pacific Concrete Placing Co. 11
Rolandi, F. 19
Spring Construction Co. 21
Twohy Bros. Co. 19
Worswick Street Paving Co. 19

CONTRACTORS' MACHINERY
Austin-Western Road Machy Co. ..... —
Bacon & Co., Edward R. 8, 9
Barber Asphalt Paving Co. 8
Brown Hoisting Machinery Co. 21
Browning Co., The 17
Bucyrus Company 11
Chalmers & Williams 7
Harron, Rickard & McCone ..... —
Hendy Iron Works, Joshua ..... —
Jackson Iron Works, Byron 10
Parrott & Co. 8, 9, 10, 11
Platt Iron Works Co. 9
Waterloo Cement Machy. Corp'n ..... —
Young Machy. Co., A. L. 22

CRANES
Bacon & Co., Edward R. 8, 9
Brown Hoisting Machinery Co. 21
Browning Co., The 17
Bucyrus Company 11
Hendy Iron Works, Joshua ..... —
Osgood Co., The 12
Parrott & Co. 8, 9, 10, 11

CRUSHERS
Allis-Chalmers Mfg. Co. 21
Austin-Western Road Machy Co. ..... —
Bacon & Co., Edward R. 8, 9
Chalmers & Williams 7
Hendy Iron Works, Joshua ..... —
Parrott & Co. 8, 9, 10, 11
Smith Engineering Works 10

CULVERTS, CORRUGATED Page.
California Corrugated Culvert Co. ..... —
Corrugated Culvert Companies ..... —
Western Pipe & Steel Co. 5

CURB BAR
California Curb Bar Co., Inc. ..... —

DAM CONSTRUCTION
Eastwood Construction Co. 21

DITCH DIGGERS
Bacon & Co., Edward R. 8, 9
Browning Co., The 17
Buckeye Traction Ditcher Co. 22
Ware, R. F. 10
Young Machy. Co., A. L. 22

DREDGES, DIPPER
Yuba Construction Co., The 20

DREDGING MACHINERY
Bucyrus Company 11
Osgood Co., The 12

ELECTRICAL MACHINERY
Allis-Chalmers Mfg. Co. 21
Westinghouse Electric & Mfg. Co. 3

ENGINES, DIESEL, AND OIL
Allis-Chalmers Mfg. Co. 21
Moore & Co., Chas. C., Engineers 20

ENGINES, GAS
Allis-Chalmers Mfg. Co. 21

ENGINES, STEAM
Allis-Chalmers Mfg. Co. 21
Hendy Iron Works, Joshua ..... —
Moore & Co., Chas. C., Engineers 20

EXCAVATING CONTRACTOR
Ware, R. F. 10

EXPANSION JOINT PROTECTORS
California Curb Bar Co., Inc. ..... —

EXPLOSIVES
California Trojan Powder Co. 27

FEED WATER HEATERS
Platt Iron Works Co. 9

FIRE HYDRANTS
Greenberg's Sons, M. 21

FLUMES, IRON
California Corrugated Culvert Co. ..... —

GEARS, SILENT
General Electric Co. ..... —

GENERATORS, ELECTRIC
Allis-Chalmers Mfg. Co. 21
Westinghouse Electric & Mfg. Co. 3

GIANTS
Hendy Iron Works, Joshua ..... —
Pelton Water Wheel Co., The 21

GRATINGS
California Curb Bar Co., Inc. ..... —

GRAVEL, CONCRETE MIX
Grant Gravel Co. 17
Grant Rock & Gravel Co. 17
Worswick Street Paving Co. 19

HEATERS
Platt Iron Works Co. 9

HOISTING MACHINERY
Austin-Western Road Machy Co. ..... —
Bacon & Co., Edward R. 8, 9
Brown Hoisting Machinery Co. 21
Browning Co., The 17
Harron, Rickard & McCone ..... —
Hendy Iron Works, Joshua 5
Parrott & Co. 8, 9, 10

HOSE, AIR, STEAM AND WATER
N. Y. Belting & Packing Co. ..... —

HYDRAULIC SUPPLIES
American Well Works 9
California Corrugated Culvert Co. ..... —
Hendy Iron Works, Joshua ..... —
Jackson Iron Works, Byron 10
Krogh Pump Mfg. Co. 22
Platt Iron Works Co. 9
Sacramento Pipe Works 19
Western Pipe & Steel Co. 5

MAIL BOXES
American Mailing Device Corp. 9
Parrott & Co. 8, 9, 10, 11

MAIL CHUTES
American Mailing Device Corp. 9
Parrott & Co. 8, 9, 10, 11

METERS, FLOW—OIL, GAS, AND WATER
General Electric Co. ..... —

(Continued on Page 20)

Generated on 2024-09-30 00:56 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Telephone Sutter 2656

Moffett & Mead

Contractors

505 Monadnock Bldg. San Francisco

California Road and Street Improvement Company

Contractors for

Asphalt Pavements, Macadam, Oiled Macadam and Cement and Concrete Work

Fresno, California

Office: New Holland Building, Rooms 217-218.
P. O. Box 591. Phone 1466.

Yards: S. P. R. R. Reservation, Cor. Neilson and West Avenue.

Producers of Sand, Gravel and Ballast

Telephone Douglas 4769

F. ROLANDI

GENERAL CONTRACTOR

801-806 Bank of Italy Building
550 Montgomery Street

San Francisco, Cal.

Twohy Brothers Company

RAILROAD CONTRACTORS

First National Bank Building, San Francisco

ALL KINDS OF

Cement-Concrete Construction

"Asphalt Concrete"

OUR SPECIALTY

We are dealers in Asphalt, Lime Dust, Rock and Sand.

Worswick Street Paving Company

Union National Bank Building, FRESNO, CAL.

Fairchild-Gilmore-Wilton Company

PAVING CONTRACTORS

MAIN OFFICE—Pacific Electric Bdg., Los Angeles
BRANCHES—San Diego, San Pedro, Wilmington, Long Beach, Pasadena
QUARRIES—Spadra, Corona, and Victorville

L. S. QUIMBY

CONSULTING ENGINEER

818 Foxcroft Building, San Francisco

Reports, Investigations, Surveys and Estimates

Irrigation and General Construction

Sacramento Pipe Works

MANUFACTURERS

SHEET STEEL RIVETED PIPE WELL CASING and AIR PIPE

WHOLESALE DISTRIBUTORS

Standard Pipe Screw Joint Casing
Pipe and Casing Fittings Valves and Brass Goods

Hydraulic Engineers and Contractors

SACRAMENTO, CAL.

Generated on 2024-09-30 00:59 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

WHERE TO BUY IT ON THE PACIFIC COAST

(Continued from Page 18)

MOTORS Page.
Allis-Chalmers Mfg. Co. 21
Westinghouse Electric & Mfg. Co. 3

PACKING
N. Y. Belting & Packing Co. —

PAVING MATERIALS
California Curb Bar Co., Inc. —
Grant Gravel Co. 17
Grant Rock & Gravel Co. 17
Pacific Portland Cement Co., Con. 23
Riverside Portland Cement Co. 14
Santa Cruz Portland Cement Co. —
Standard Oil Co. 6
Standard Portland Cement Corporation. 2
Worswick Street Paving Co. 19

PIPE COVERING
Hill, Hubbell & Co. 7

PIPE, GENUINE IRON WROUGHT
Woods, Huddart & Gunn. 21

PIPE, RIVETED STEEL AND IRON
Pelton Water Wheel Co., The. 21
Sacramento Pipe Works 19
Western Pipe & Steel Co. 5
Woods, Huddart & Gunn. 21

PIPE, WOOD
Pacific Tank & Pipe Co. 7
Redwood Manufacturers Co. 11

PNEUMATIC HOSE
N. Y. Belting & Packing Co. —

POWER PLANTS
Allis-Chalmers Mfg. Co. 21
Chalmers & Williams 7
Hendy Iron Works, Joshua —
Moore & Co., Chas. C., Engineers 20
Westinghouse Electric & Mfg. Co. 3

PUMPS
Allis-Chalmers Mfg. Co. 21
American Well Works 9
Harron, Rickard & McCone —
Hendy Iron Works, Joshua —
Jackson Iron Works, Byron 10
Krogh Pump Mfg. Co. 22
Moore & Co., Chas. C., Engineers 20
Platt Iron Works Co. 9
Yuba Construction Co., The 20

RAILINGS, PIPE
Sacramento Pipe Works 19

RIVER BANK PROTECTION
River Current Control Co. —

ROAD OILS
Standard Oil Co. 6

ROAD MACHINERY
Austin-Western Road Machy Co. —
Bacon & Co., Edward R. 8, 9
Browning Co., The 17
Chalmers & Williams 7
Koehring Machine Co. —
Parrott & Co. 8, 9, 10, 11
Smith Co., T L. 8
Waterloo Cement Machy. Corp'n —
Young Machy. Co., A. L. 22
Yuba Construction Co., The 20

ROAD ROLLERS
Austin-Western Road Machy Co. —
Bacon & Co., Edward R. 8, 9
Barber Asphalt Paving Co. 8
Erie Machine Shops —
Parrott & Co. 8, 9, 10, 11
Young Machy. Co., A. L. 22

ROCK CRUSHERS, DISC OR JAW
Chalmers & Williams 7
Parrott & Co. 8, 9, 10, 11
Smith Engineering Works 10

ROCK, ORE, AND GRAVEL HANDLING MACHINERY
Parrott & Co. 8, 9, 10, 11
Smith Engineering Works 10

ROPE, WIRE
Roebling's Sons Co., John A. 10

RUBBER GOODS
N. Y. Belting & Packing Co. —

SECOND-HAND EQUIPMENT
Classified 16

SEWER DITCHING MACHINES
Austin-Western Road Machy. Co. —
Bacon & Co., Edward R. 8, 9
Buckeye Traction Ditcher Co. 22
Ware, R. F. 10
Young Machy. Co., A. L. 22

SEWER PIPE
California Corrugated Culvert Co. —
Pacific Tank & Pipe Co. 7
Redwood Manufacturers Co. 11

SHOVELS, STEAM
Bucyrus Company 11
Osgood Co., The 12

TAMPERS, POWER Page.
Bacon & Co., Edward R. 8, 9

TANKS, WOOD
Pacific Tank & Pipe Co. 7
Redwood Manufacturers Co. 11

TRACTORS
Allis-Chalmers Mfg. Co. 21
Yuba Construction Co., The 20

TRAMWAYS, AERIAL
Parrott & Co. 8, 9, 10, 11
Roebling's Sons Co., John A. 10

TRANSMISSION MACHINERY
Allis-Chalmers Mfg. Co. 21
Chalmers & Williams 7
Harron, Rickard & McCone —
Hendy Iron Works, Joshua —
Platt Iron Works Co. 9

TURBINES, HYDRAULIC
Allis-Chalmers Mfg. Co. 21
Harron, Rickard & McCone —
Hendy Iron Works, Joshua —
Pelton Water Wheel Co., The 21
Platt Iron Works 9

TURBINES, STEAM
Allis-Chalmers Mfg. Co. 21
Moore & Co., Chas. C., Engineers 20
Westinghouse Electric & Mfg. Co. 3

WAGONS, DUMP
Austin-Western Road Machy. Co. —
Bacon & Co., Edward R. 8, 9
Parrott & Co. 8, 9, 10, 11
Troy Wagon Works 9

WATER MAINS
California Corrugated Culvert Co. —
Pacific Tank & Pipe Co. 7
Sacramento Pipe Works 19
Western Pipe & Steel Co. 5

WATER WHEELS
Allis-Chalmers Mfg. Co. 21
Hendy Iron Works, Joshua —
Moore & Co., Chas. C., Engineers 20
Pelton Water Wheel Co., The 21
Platt Iron Works Co. 9

WELDING OUTFITS
General Electric Co. —

WIRE CABLES
Roebling's Sons Co., John A. 10

CHAS. C. MOORE & CO. ENGINEERS INC.

Contractors for Complete Plants
HIGH GRADE MACHINERY

Home Office: SAN FRANCISCO, 40 First St.

New York City Fulton Bldg.
Salt Lake City Kearns Bldg.
Los Angeles I. N. Van Nuys Bldg.
Tucson Santa Rita Hotel Bldg.
Seattle Mutual Life Bldg.

THE YUBA CONSTRUCTION CO.

YUBA HYDRAULIC DREDGES
YUBA GOLD DREDGES
YUBA CENTRIFUGAL PUMPS
YUBA BALL TREAD TRACTORS

THE YUBA CONSTRUCTION CO.
433 California Street, San Francisco
Works: Marysville, California

Generated on 2024-09-30 01:06 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

The Pelton Water Wheel Co.

Sole Manufacturers of Pelton Wheels

99 West Street
New York, N. Y.

2314 Harrison Street
San Francisco, Cal.

1

BROWNHOIST CRANES

Locomotive Cranes
Overhead Cranes
Crabs and Winches
Tramrail Systems
Trolleys
Electric Hoists
Buckets and Tubs.

Ask for Catalogs.

BROWN HOISTING MACHINERY CO., Cleveland, O.
San Francisco Offices: Monadnock Bldg.

TROJAN EXPLOSIVES

The Most Powerful Made
Safe and Economical

Manufactured on a solid base and do not contain any liquid explosive ingredient.

Will not freeze — Will not exude
Will not give off noxious gases

No thawing
No leaking
No headaches

California Trojan Powder Company

Phelan Building
San Francisco, Cal.

Railway Exchange Bdg.
Portland, Oregon

ALLIS-CHALMERS MANUFACTURING CO.,

Engineers — Manufacturers

Apparatus for the generation and application of power by Electricity, Steam, Water, Air, Gas and Oil,

For the use of the

Electrical, Mechanical, Mining, and Civil Engineer and Contractor.

Pacific Coast Offices:
Rialto Building—San Francisco
Title Insurance Building—Los Angeles

Reinforcing bars cut to length, fabricated or placed.

Steel Castings.

Wrought Iron or Steel Pipe.

Lock Bar Pipe, sizes 20″ to 72″ diameter.

Suction Dredges.

WOODS, HUDDART & GUNN

444 MARKET ST. San Francisco

California Standard Fire Hydrants

Wharf Hydrants
Brass Hose Couplings
Fire Department Supplies
Stand Pipe Valves & Fittings

M. Greenberg's Sons

225-227 Beale St. San Francisco, Cal.

J. H. Spring, President — W. G. Appleton, Manager

Spring Construction Co.

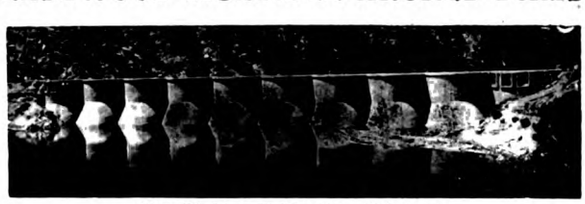
Street Construction Contractors

First National Bank Building
Berkeley, Cal.

Phone Berkeley 75

ENGINEERS AND BUILDERS OF

EASTWOOD MULTIPLE ARCHED DAMS



New Big Bear Valley Dam, California

EASTWOOD CONSTRUCTION CO.

1020-1-2 Hearst Building — SAN FRANCISCO

Generated on 2024-09-30 01:06 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

A perfect trench at one cut

and variable width trenches with a single wheel are the big features offered for a quarter of a century in the

Buckeye Ditcher

(Traction Drive)

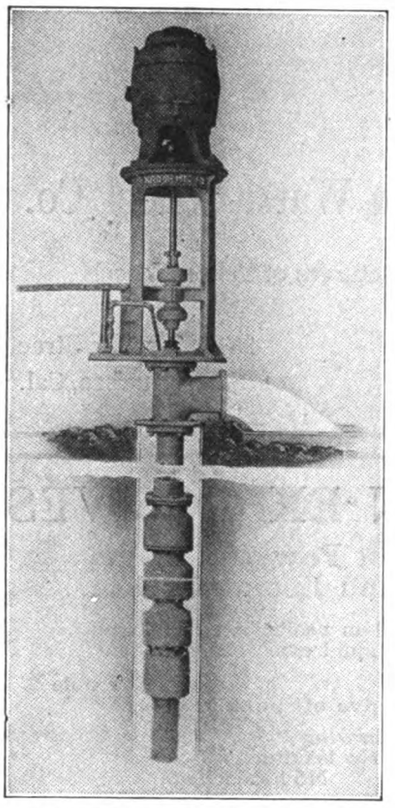
Send for the catalog which tells in detail how they are made, why they stand the wear and tear, and shows photos of many machines at work.

We would like to tell you about repeat orders from California users.

The Buckeye Traction Ditcher Co., Findlay, Ohio, makes a full line of traction tile, and open ditchers, trench and pipe-line excavators, clay and peat diggers.

Where would you like the catalog sent?

A. L. YOUNG MACHINERY COMPANY
26-28 FREMONT ST., SAN FRANCISCO



KROGH
DEEP WELL TURBINE PUMPS

Highly Efficient

Excellent Wearing Qualities

Automatically Water-balanced

No Ball Bearings

Designed for Wells 10" and Up

Is the Best No Pit Pump

IT IS THE NO TROUBLE PUMP

Write for our Bulletin No. 85W.

We also build Centrifugals, Deep Well Cylinders, Dredge Pumps, Tailings Pumps, Water Works and Underwriters Pumps.

KROGH PUMP MANUFACTURING CO.
147-159 BEALE STREET, San Francisco, Cal.
206 NO. LOS ANGELES STREET, Los Angeles, Cal.

ALPHABETICAL INDEX TO ADVERTISERS

WHERE TO BUY IT ON THE PACIFIC COAST, PAGE 18

	Page.
ALLEN, CHARLES R.	17
ALLIS-CHALMERS MFG. CO.	21
AMERICAN MAILING DEVICE CORP.	9
AMERICAN WELL WORKS	9
AUSTIN-WESTERN ROAD MACHINERY CO.	—
BACON & CO., EDWARD R.	8, 9
BARBER ASPHALT PAVING CO.	8
BROWN HOISTING MACHINERY CO.	21
BROWNING CO., THE	17
BUCKEYE TRACTION DITCHER CO.	22
BUCYRUS COMPANY	11
CALIFORNIA CORRUGATED CULVERT CO.	—
CALIFORNIA CURB BAR CO., INC.	—
CALIFORNIA ROAD & STREET IMPROVEMENT CO.	19
CALIFORNIA TROJAN POWDER CO.	21
CHALMERS, INC., H. A.	17
CHALMERS & WILLIAMS	7
CONTRA COSTA CONSTRUCTION CO.	17
COWELL LIME & CEMENT CO., HENRY	Back Cover
DANIEL CONTRACTING CO.	17
EASTWOOD CONSTRUCTION CO.	21
ERIE MACHINE SHOPS	—
FAIRCHILD-GILMORE-WILTON CO.	19
FOOTE MFG. CO.	—
GENERAL ELECTRIC CO.	—
GRANT GRAVEL CO.	17
GRANT ROCK & GRAVEL CO.	17
GREENBERG'S SONS, M.	21
HARRON, RICKARD & McCONE	—
HENDY IRON WORKS, JOSHUA	—
HILL, HUBBELL & CO.	7
JACKSON IRON WORKS, BYRON	10
JAEGER MACHINE CO.	8
KOEHRING MACHINE CO.	—
KROGH PUMP MFG. CO.	22
LONE STAR CULVERT CO.	—
MOFFETT & MEAD	19
MONTANA CULVERT CO.	—
MOORE & CO., CHAS. C., ENGINEERS	20
NEBRASKA CULVERT & MFG. CO.	—
N. Y. BELTING & PACKING CO.	—
OSGOOD CO., THE	12
PACIFIC CONCRETE PLACING CO.	11
PACIFIC PORTLAND CEMENT CO., CON.	23
PACIFIC TANK & PIPE CO.	7
PARROTT & CO.	8, 9, 10, 11
PELTON WATER WHEEL CO, THE	21
PLATT IRON WORKS CO.	9
PROFESSIONAL DIRECTORY	15
QUIMBY, L. S.	19
RAPID HEATED MIXER CO.	—
REDWOOD MANUFACTURERS CO.	11
RIVER CURRENT CONTROL CO.	—
RIVERSIDE PORTLAND CEMENT CO.	14
ROEBLING'S SONS CO., JOHN A.	10
ROLANDI, F.	19
SACRAMENTO PIPE WORKS	19
SANTA CRUZ PORTLAND CEMENT CO.	—
SECOND HAND EQUIPMENT	16
SIOUX FALLS METAL CULVERT CO.	—
SMITH CO., T. L.	11
SMITH ENGINEERING WORKS	10
SOUTHERN PACIFIC CO.	5
SPOKANE CORRUGATED CULVERT & TANK CO.	—
SPRING CONSTRUCTION CO.	21
STANDARD OIL CO.	6
STANDARD PORTLAND CEMENT CORPORATION	2
TROY WAGON WORKS	9
TWOHY BROS. CO.	19
UTAH CORRUGATED CULVERT & FLUME CO.	—
WARE, R. F.	10
WATERLOO CEMENT MACHY. CORP'N	—
WESTERN METAL MFG. CO.	—
WESTERN PIPE & STEEL CO.	5
WESTINGHOUSE ELECTRIC & MFG. CO.	3
WOODS, HUDDART & GUNN	21
WORSWICK STREET PAVING CO.	19
YOUNG MACHINERY CO., A. L.	22
YUBA CONSTRUCTION CO., THE	20

Generated on 2024-09-30 00:57 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PRIMARY or ULTIMATE ECONOMY, WHICH?

PLACING CONCRETE LINING IN CANAL
Brentwood, California

Concrete lined canals conserve water—render control easier—in fact absolute, save for evaporation.

Depending solely on local conditions, the initial cost of concrete lined canals and ditches may exceed that of other types, but ultimately lining with concrete spells ***economy.***

Seven Miles Lined as Shown Above

GOLDEN GATE CEMENT USED EXCLUSIVELY

Manufactured by

Pacific Portland Cement Co. Con.

Pacific Building, San Francisco

Northwestern Office: *Board of Trade Building, Portland*

Generated on 2024-09-30 01:01 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Henry Cowell Lime & Cement Company

NO. 2 MARKET ST., SAN FRANCISCO, CAL.

Wishes All Its
Friends and Customers

—A—

Merry Christmas

and

—A—

Happy and Prosperous New Year

Manufacturers of

MT. DIABLO CEMENT
COWELL SANTA CRUZ LIME

BRANCHES:

Oakland San Jose Sacramento Santa Cruz
Portland, Oregon Tacoma, Washington

Generated on 2024-09-30 00:57 GMT / https://hdl.handle.net/2027/uiug.30112007838375
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN